

100 YEARS OF THE TANK INSIDE THE SOMME'S MARK I

HISTORY

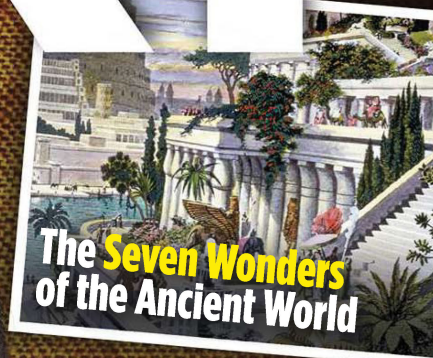
REVEALED

BRINGING THE PAST TO LIFE
ISSUE 34 // OCTOBER 2016 // £4.50



CUSTER'S LAST STAND

The Battle of Little Bighorn



The **Seven Wonders**
of the Ancient World

ENIGMA CODE

The Bletchley
boffins who saved
Britain in WWII

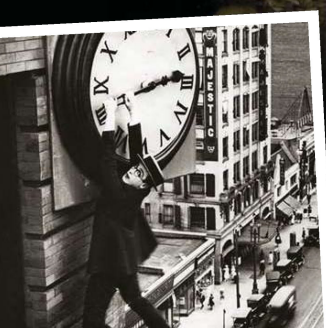


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WILLIAM THE CONQUEROR

How an illegitimate son of Viking blood
became King of England



**THE GOLDEN AGE
OF THE SILVER SCREEN**

**DID RUSSIA'S EMPRESS
MURDER THE TSAR?**
Catherine the Great's dark past



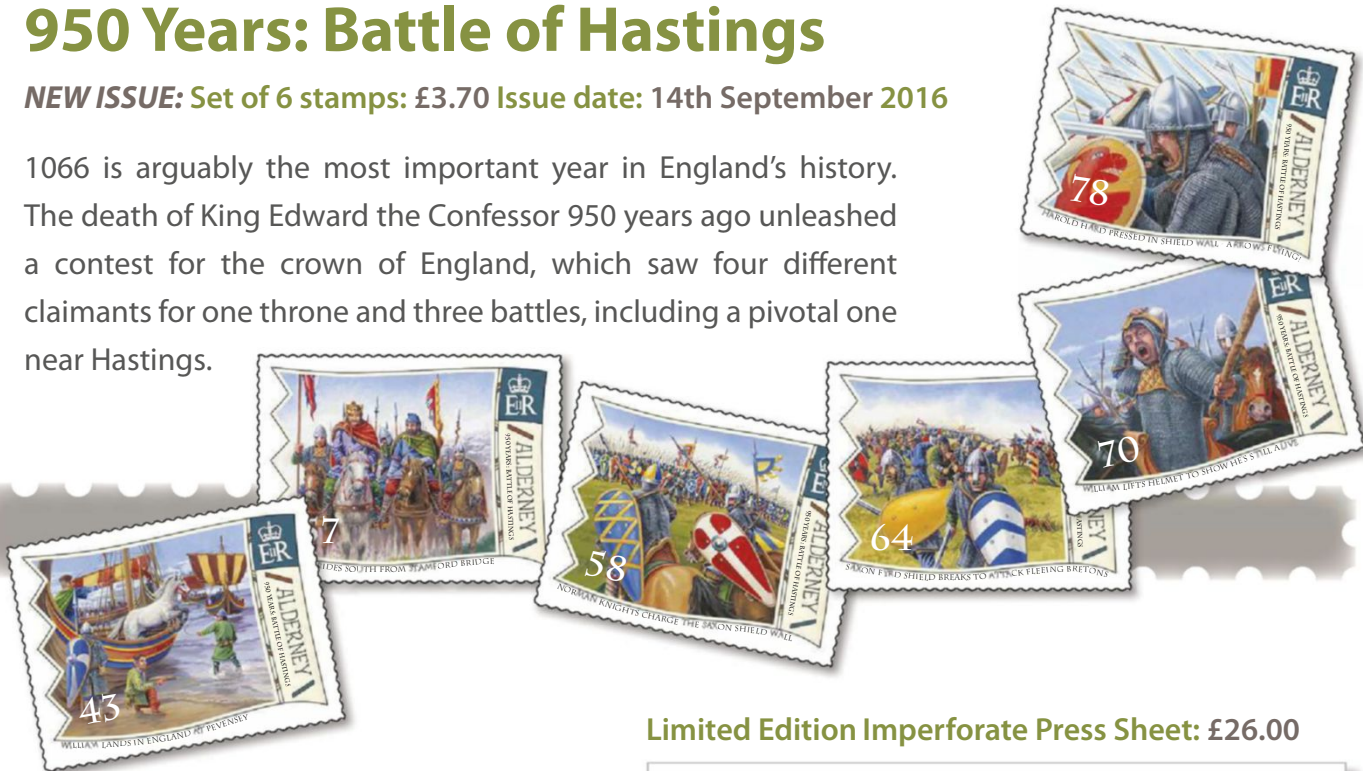
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950 Years: Battle of Hastings

NEW ISSUE: Set of 6 stamps: £3.70 Issue date: 14th September 2016

1066 is arguably the most important year in England's history. The death of King Edward the Confessor 950 years ago unleashed a contest for the crown of England, which saw four different claimants for one throne and three battles, including a pivotal one near Hastings.



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Welcome



Many of us know the story of **William the Conqueror** from school. He invaded in 1066, beat Harold Godwinson at the Battle of Hastings – where the Anglo-Saxon was felled by an **arrow to the eye** – and became King of England. Except (even leaving to one side the argument of the arrow in the eye) that's a long way from the full story of how this bastard **son of Viking descendants** came to power in the first place. So who was he, and how did he come to believe himself the **rightful heir to the English throne**? Find out from page 28 – it's a gripping tale of **rags to riches** that will have you on the **edge of your seat**.

More mysteries are unravelled for you this issue in the shape of the **Seven Wonders of the Ancient World** (how many can you name before opening the feature?), and the code-crackers whose efforts helped bring about an end to the **Battle of the Atlantic during World War II**.

And don't miss the story of Guillaume Le Gentil, a lesser-known French astronomer who spent 11 years on a



Discover the world of silent cinema from page 62

round-the-world star search that cost him his fortune, his wife and a great many sleepless nights. Oh, and if that all has your head spinning, why not take a break with our Top 10 this month – **history's most celebrated bears**! Who says history has to be serious?

And please **keep your letters coming**!

Paul

Paul McGuinness
Editor

Don't miss our November issue, on sale 13 October

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THIS MONTH WE'VE LEARNED...

\$825

The cost of a 1909 Ford Model T, the first affordable car, equivalent to \$21,000 today. See page 22.

17,576

The number of possible outcomes when a letter is typed into a three-rotor Enigma machine – Nazi Germany's encoding device. See page 46.

2.3m

The number of stone blocks that were needed to build the Great Pyramid of Giza. See page 54.



Your next break in Normandy?

2016 marks the 950th anniversary of the Norman invasion.

Born in Falaise, William, Duke of Normandy, became the Conqueror at the Battle of Hastings in 1066, the story of which is told in the unique Bayeux Tapestry. To celebrate this occasion, from summer through to December, there will be medieval merriment for everyone throughout Normandy with street markets, festivals, music, dance, sound and light shows and special exhibitions in the towns and villages associated with William the Conqueror and his momentous expedition.

A très bientôt en Normandie !

medieval-normandy.co.uk





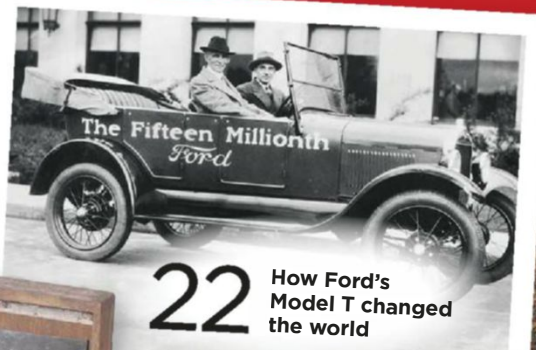
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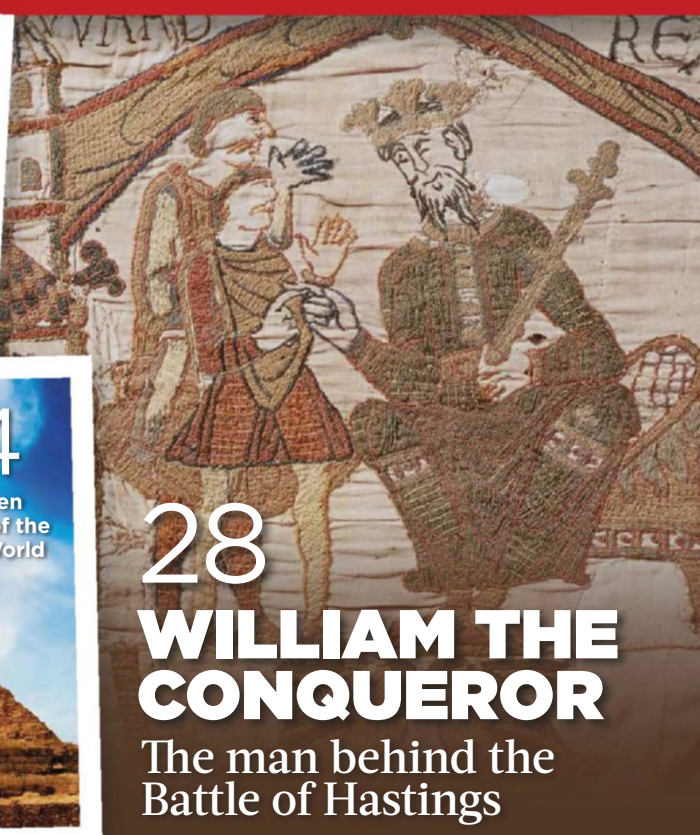
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Enigma code cracked!



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The Seven Wonders of the Ancient World



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WILLIAM THE CONQUEROR

The man behind the Battle of Hastings

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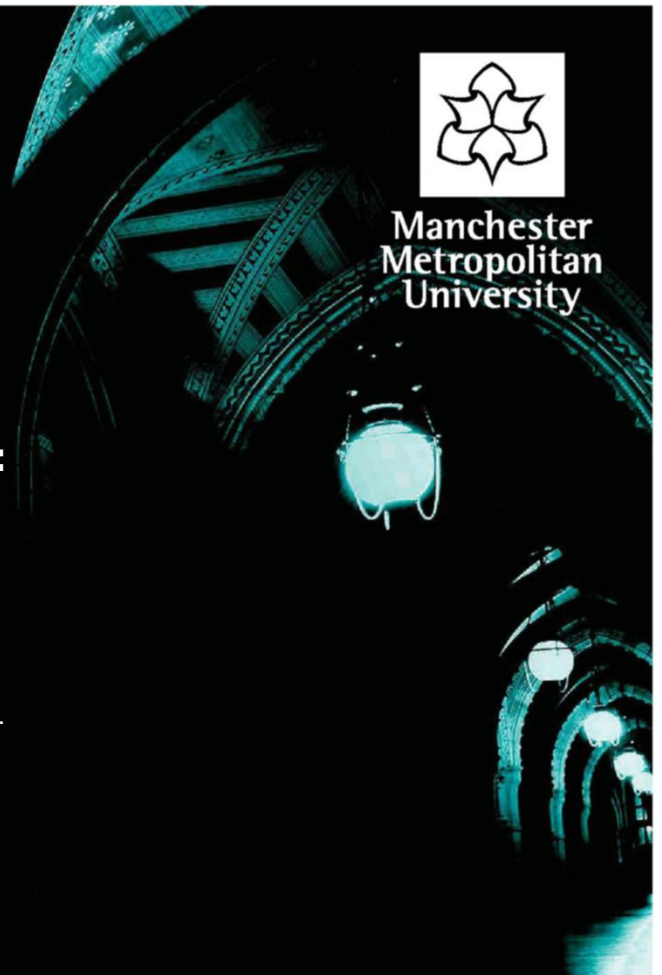
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READERS' LETTERS

Get in touch – share your opinions on history and our magazine

LUCKY ESCAPE

Whilst 'roaming' through my memories recently I was suddenly reminded of the period during the war when we lived in Everton, Liverpool. For some reason or other, the Blitz in May 1941 came to mind, when Liverpool endured eight nights of consecutive bombing – almost each of those nights is engraved on my memory.

My first recollection of the first of those raids was the air raid siren sounding, and

specialty installed in the kitchen. Suddenly there was this loud crash, and our parents came dashing into the kitchen, screaming at us to get into the shelter as a bomb had fallen between our house and the one next door. Part of the dividing stone wall had disappeared and in its place was a huge crater.

Due to my mother's foresight, she had previously constructed sandbags (which I had to assist

LETTER OF THE MONTH

"Our parents came dashing into the kitchen, screaming at us to get into the shelter"

our parents leading us to our 'shelter'. This had originally been the larder, which had a small window covered in a wire mesh and in which bunk beds were installed.

The one night I will never forget was when my two brothers and I were in a bed

in filling with sand!), which were propped up against the larder window. They saved the lives of my father, mother and baby brother, as the wall they were leaning against would surely have collapsed. Our next-door neighbours were safely installed in their Anderson shelter. As you

can imagine, we both became good friends and helped each other out.

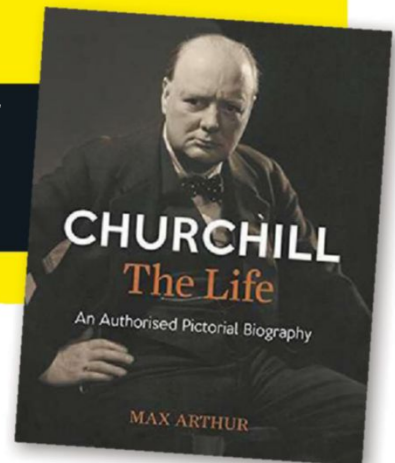
I was 16 years of age at the time, and still had to go to school, where I boasted to my pals about the bomb and showed them pieces of shrapnel!

NC Henshaw, County Down

This month's prize is a copy of *Churchill: The Life* by Max Arthur (£25, Octopus Books). An authorised pictorial biography, it narrates the story of one of Britain's most celebrated prime ministers, from his early years on.

Editor replies:

We love hearing readers' stories, and this one was particularly moving. We can't begin to imagine how frightening it must have been for you and your family. Thank you for sharing.



MISUNDERSTOOD

Surely economic forces caused the Russian Revolution, with war losses as the trigger (History Makers, June 2016)? To give much weight to a scandal in high society is to make the mistake

that the criminals – and they were criminals – who carried out his botched murder made. I'd like to add that I suspect Rasputin was not 'evil' but suffering from bipolar disorder.

Judith Mack, via email

Would love to see an issue focused on the life and works of Jane Austen!
Mary Wills Shaler

RETURN TO SENDER

I was interested to read about the first letter from North America (I Read the News Today, August 2016), which was sent from Newfoundland to Henry VIII in England. The only problem is that Henry would have never received the letter. Setting aside all historical inaccuracies, you

show it having a stamp bearing the American flag, but surely it should have been posted with a Canadian stamp since Newfoundland is in Canada?

Whit Strong

Ottawa, Canada

MYSTERY REVEALED

Concerning Rasputin (History Makers, June 2016), in his book *Nicholas and Alexandra*, Robert K Massie held the opinion that Rasputin had a positive effect on the couple's haemophiliac son through his ability to hypnotise

KEEPING US POSTED

The more eagle-eyed among you may have noticed an American stamp on a letter from Canada



READER PICKS

Our map of universal suffrage and an article on the Mary Rose were among this month's favourites



him. When the son was injured, the hypnosis was used to calm him and reduce his anxiety. This in turn would lower his blood pressure, therefore helping to limit the bleeding.

David Schor
Coraopolis, PA, USA

MAKING WAVES

Wow, I just finished reading a copy of *History Revealed* (October 2015) that I came across while visiting a senior centre. I put everything on hold until I was finished – dinner, housework, telephone calls – I could not put it down! Of special interest was the article about the Mary Rose (Yesterday's Papers). My first trip to London (the first of many, many trips) was on the day she was lifted out of the Solent, so it was exciting to follow this historic event. Some years later we went to the exhibit at Portsmouth and were just captivated with this mystery ship! Next trip we will see the new museum!

Lauretta Kliet,
via Facebook

#Somme100 today and with that, there is a riveting article in @HistoryRevMag about #DonaldBell a professional footballer turned soldier. @MovieManUK

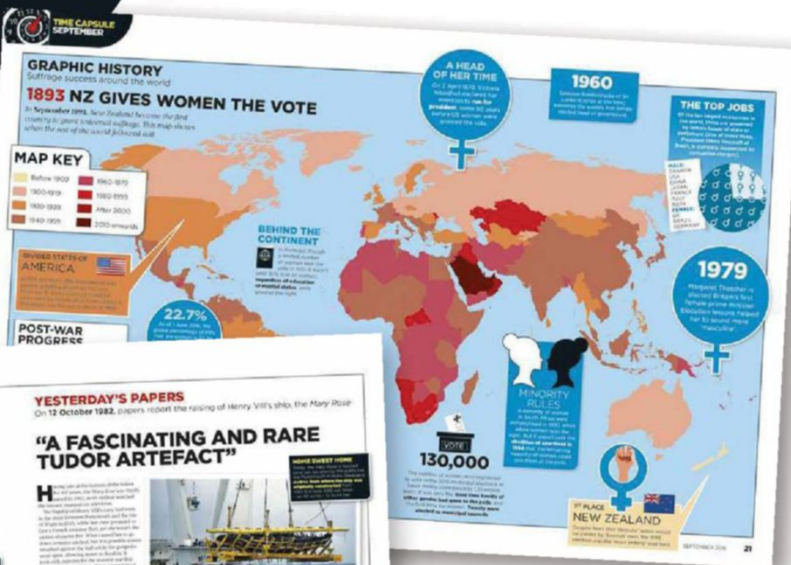
WHAT IF?

I was very interested in Claire Hackney's letter (Readers' Letters, September 2016). I too have often wondered whether the various heirs to the throne, like Arthur Tudor, who died untimely, would have rated as king. Would the course of history have been very different? There are several examples, including Prince Henry Stuart, Henry VIII's brother, the father of George III, his son Frederick, Duke of York, and the Duke of Clarence, George V's older brother. This list excludes those who were disinherited for other reasons.

Rosemary Currie,
via email

WOMEN'S WORK

I write to state how valuable your eye-catching chart on the women's suffrage attainment struggle was



Have really enjoyed reading the last few issues of @HistoryRevMag. Make sure you check it out for solid history in a visually engaging format. @CaseyMMeier

(Graphic History, September 2016), especially to stress how New Zealand pioneered universal voting and how slow Switzerland was to bring it in. Nonetheless, we in Britain deserve, surely, more than just one summary of Emily Davison's actions?

Larry Iles, via post

ARE YOU A WINNER?

The lucky winners of the crossword from issue 32 are:
D Armstrong, Cheshire
A Roberts, Hereford
P Laker, Aberystwyth
Congratulations! You've each won a copy of *India Conquered* by Jon Wilson, which explores the British Raj and the origins of contemporary South Asian society. For those of you who missed out, why not give this month's crossword a go? Simply turn to page 96.

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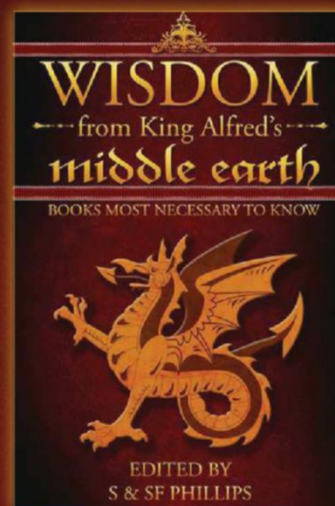


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Illustration by Lauren Rowling



TIME CAPSULE

THIS MONTH IN HISTORY





SNAPSHOT

1942 NOSE JOB

Female workers at the Douglas Aircraft factory in Long Beach, California apply the finishing touches to rows of transparent aircraft noses. These acrylic glass constructions are destined for the company's A-20J attack bombers and will provide excellent panoramic vision for the additional bombardier that this particular aircraft carries. Douglas Aircraft will manufacture in the region of 450 such planes, 169 of which have been commissioned by the RAF, who subsequently renames this model Boston Mark IV.

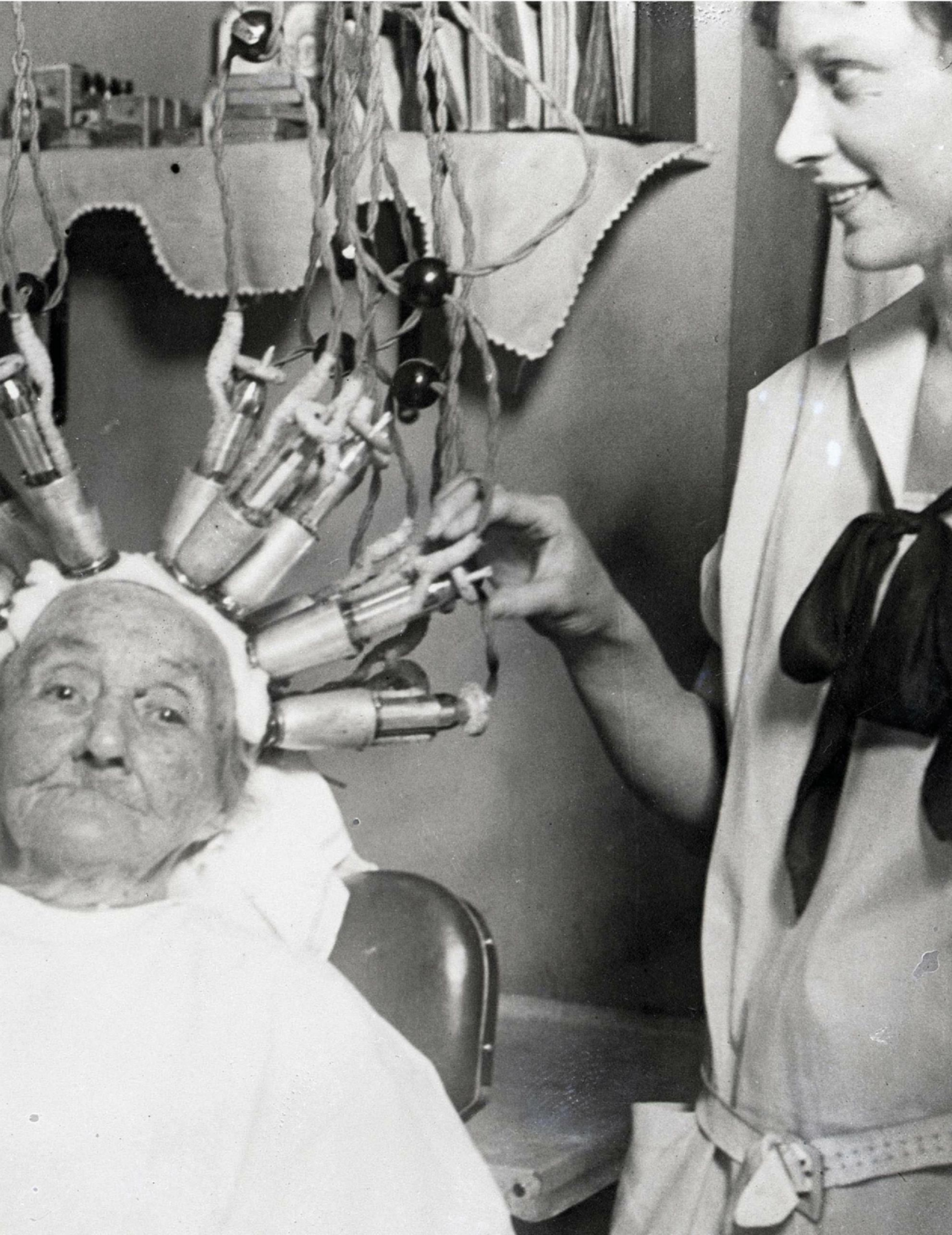
PRESS ASSOCIATION



SNAPSHOT

1926 SHOCK OF THE NEW

Margaret Waggoner Mitchell looks like her emotional state is somewhere between alarmed and relaxed. The Kansas City, Missouri native is a few months shy of her 100th birthday but nonetheless remains eager to try a new look. Having had a 'bob' haircut two years previously, Mrs Mitchell now plumps for a permanent wave, an effect achieved by apparently plugging into the mains. Technology has certainly advanced rapidly since her arrival in Kansas City in a covered wagon as part of the 19th-century mass westward migration.





SNAPSHOT

1934 BARREL OF LAUGHS

Think rugby club initiations are barbaric? Then spare a thought for barrel makers. As has been the tradition since the 14th century, all apprentices are encouraged to take part in a ceremony known as 'trussing the cooper' before graduating. In it, the newly qualified cooper is placed in a barrel that is still hot from tempering, while his colleagues dance around him hammering on the hoops. He is then covered in beer, sawdust and soot and rolled around the cooperage, before eventually being released in order to be presented with his certificate.

GETTY





"I READ THE NEWS TODAY..."

Weird and wonderful, it all happened in **October**



PETE'S SAKE

1880 PATIENCE OF A SAINT

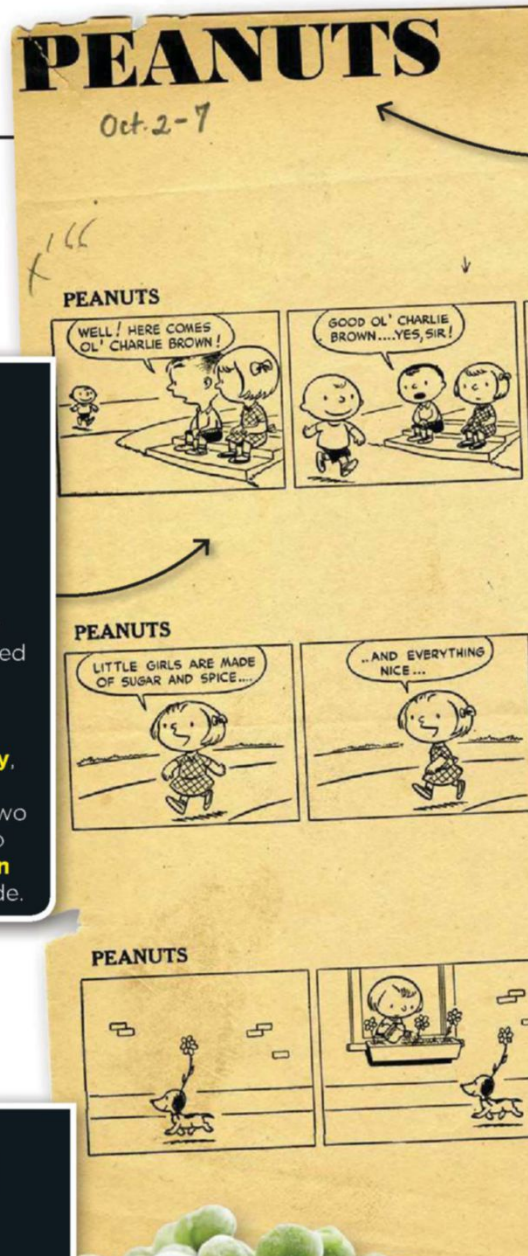
Rome wasn't built in a day – and neither was Cologne's **Cathedral of Saint Peter**. Work began on the magnificent gothic building in 1248, but so faithful were successive generations of builders to the original plans that the last stone wasn't laid until 15 October 1880 – **632 years later**. The project couldn't be further from later notions of ruthless German efficiency.

**UNDER
CONSTRUCTION**

SNOOPING AROUND

1950 SAY HELLO TO CHARLIE BROWN

On 2 October 1950, Charles Schulz's comic strip *Peanuts* was first published, syndicated in seven US publications, including *The Washington Post* and *Chicago Tribune*. **Charlie Brown's dog Snoopy**, arguably the strip's star, appeared for the first time two days later. By 2000, the strip was syndicated to **more than 2,500 newspapers** worldwide.



BIRDSEYE CHEW

1952 THE BIG FREEZE

He wasn't a captain, but the founder of the modern frozen-foods industry was indeed called Birdseye. In 1952, Clarence Birdseye **began selling frozen peas**, inadvertently also making himself a hero to those who had just injured themselves and needed to administer **swelling-reducing treatment**.



In 1959, sales of frozen peas in Britain overtook sales of pods, despite very few households having freezers

RECORD MAKER

1976 GOT IT TAPED

Following Sony's release of the rival Betamax format the previous year, video recorders became the must-have gadget when JVC put the **world's first VHS machine** on sale in Japan in October 1976. The Victor HR-3300 is made available to US consumers the following year and to Brits in 1978.



WHAT'S IN A NAME?

The title *Peanuts* was chosen by United Feature Syndicate, and Schulz always disliked it, saying "It's totally ridiculous, has no meaning, is simply confusing and has no dignity."

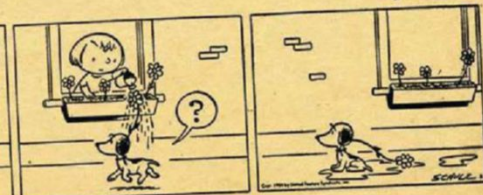
By Schulz



By Schulz

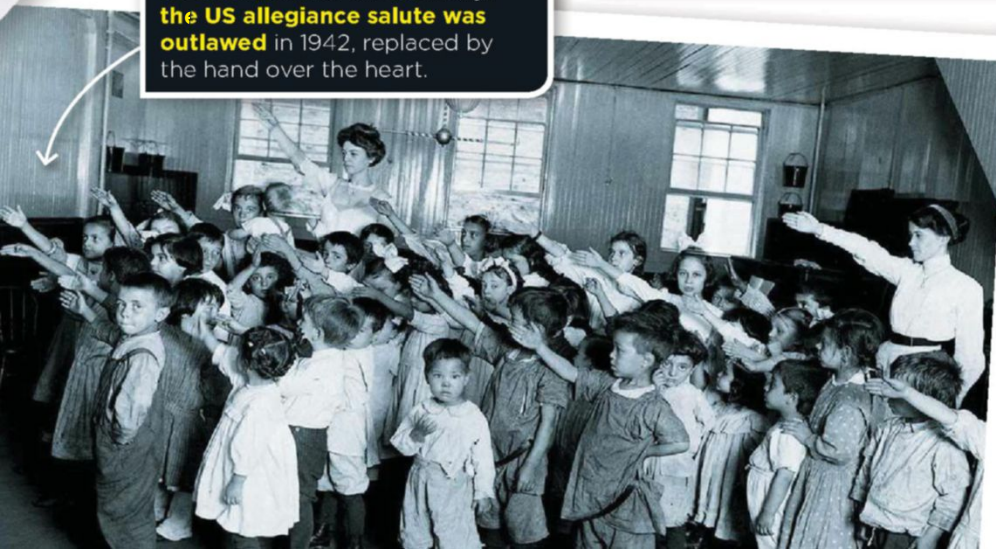


By Schulz



CHANGE OF HEART 1892 HANDS UP TO THE STARS

On 12 October 1892, the 'Bellamy salute' was first used to accompany American schoolchildren's pledge of allegiance to the Stars and Stripes. The salute, consisting of a **right arm extended with palm facing up, sideways or down** was extremely similar to that adopted by Italian fascists in the 1920s and by German Nazis the following decade. After the US declared war on Germany, **the US allegiance salute was outlawed** in 1942, replaced by the hand over the heart.



BLIND LEADING THE BLIND 1014 EYE SAY!

Basil II, Byzantine emperor between 958 and 1025, had one particular nickname – Slayer of the Bulgars. This moniker had been earned during an extended, 28-year war with Bulgaria, which ended in 1014 with a rather gruesome course of action. Basil **blinded the entire remaining Bulgarian army**, albeit leaving every 100th soldier with one eye intact. This was so that they could lead the sightless forces back to their tsar, who reportedly **died of shock** after seeing the treatment meted out to his men.

MIND THE CROWN JEWELS! 1216 STUCK IN THE MUD

On 11 October 1216, King John was travelling between Lincolnshire and Norfolk when he was taken ill and had to turn back. His baggage travelled separately on a different route and, on a tidal causeway, was **lost to the incoming waters**. The crown jewels were among his luggage and were lost in the mud. The loss troubled John for a very short period of time – he **died of his illness** little more than a week later.

"...OH BOY" October events that changed the world

31 OCTOBER 1517 NAILED IT

By publishing his Ninety-Five Theses, a list of disagreements he has with the Catholic Church, Martin Luther effectively begins the Protestant Reformation.

16 OCTOBER 1793 OFF WITH HER HEAD

Marie Antoinette, Queen of France until 1791, is beheaded in one of the most high-profile executions of the French Revolution.

2 OCTOBER 1869 INDEPENDENCE DAY

Mohandas Gandhi, best known as Mahatma, is born. The date later becomes a national holiday in India.

6 OCTOBER 1927 LOOK WHO'S TALKING

The Jazz Singer, the first 'talkie' feature film, goes on general release. Its star, Al Jolson, pockets an impressive \$75,000 in exchange for his services.

4 OCTOBER 1957 RUSSIA IN ORBIT

The Space Race gets underway when the Soviet Union launches Sputnik 1, the first satellite sent into space.

28 OCTOBER 1971 THE UK GOES CONTINENTAL

After lengthy and labyrinthine debates in the House of Commons, MPs vote by 356 to 244 for the UK to join the European Economic Community, later known as the EU. It becomes a member state in 1973.

3 OCTOBER 1990 TWO BECOME ONE

Separate countries since the end of World War II, East and West Germany are finally formally reunified.

AND FINALLY...

On 12 October 1609, the lyrics and tune of **Three Blind Mice** were published for the first time. Although known as a children's rhyme, the lyrics were said to have been making a political comment – that the mice were actually a trio of Anglican clergymen **tried and executed** for their supposedly 'heretical' beliefs.



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BLACK POWER GAMES UPROAR

MEXICO CITY, Thursday.
There was uproar in the Olympic stadium last night after a Black Power protest by two American Negro sprinters.

Tommie Smith and John Carlos stood on the victory rostrum and gave a Black Power salute as the American National Anthem was played. Smith had just won the 200 metres final in a world record time of 19.8sec. Carlos came third.

At the medal presentation ceremony, conducted by Britain's Lord Burghley, Smith wore a black glove on his right hand and Carlos a black glove on his left.

BLACK SCARF

Smith had a black scarf around his neck. Carlos wore beads. Both wore civil rights badges—and so did the silver medalist, Australian lay preacher Peter Norman.

As the band played the Star Spangled Banner, Smith thrust his gloved right hand and Carlos his black-sheathed left towards the sky in a Nazi-like salute.

They glared their eyes on the ground and refused to look at the American flag as it was being hoisted to the top of the mast.

The stadium exploded with cat-calls and some of the spectators made thumbs down gestures as they would to a Mexican matador preparing for the kill.

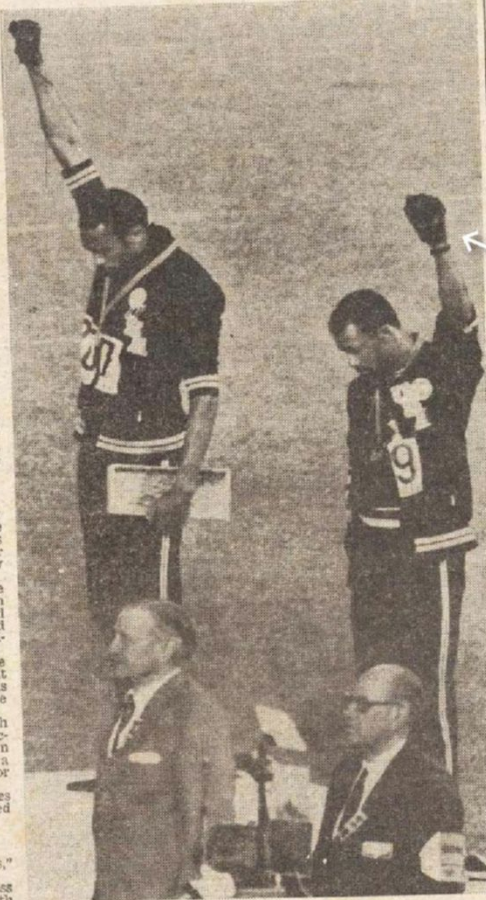
Over in the stands, the wives of the two athletes laughed heartily with friends.

'HE'LL DIE'

"Wait until Avery sees this," said Mrs. Smith. "He'll die."

Moments later, in the Press interview room, packed with reporters from many nations, Carlos cut loose a bitter tirade at the white social structure and the many Mexican fans who had jeered at him.

"They look upon us as nothing but animals," he said. "Low animals, roaches and ants. I want you to print this and print it right. If white people don't care to see black men perform, Contd. Back Page, Col. 5"



Those Black Power salutes from Gold medalist Tommie Smith and Bronze medalist John Carlos, both of the USA. Fists clenched in black gloves, they gave the salute and looked at the ground as the American flag was raised and their national anthem played.

Olympic reports—Pages 25, 46, 47

Jennie Lee robbed in party raid

GEOFFREY HOBBS

Miss Jennie Lee, the Arts Minister, had to leave a dinner party with a blanket wrapped round her shoulders last night after a thief walked off with her fur coat.

It was one of several belonging to guests stolen from the Georgian home of violinist Yehudi Menuhin, in The Grove, Highgate Village.

The thief is believed to have made his haul as nearly 30 well-known personalities listened to music after having dinner. The coats were in an upstairs bedroom.

Mr. Menuhin had arranged the dinner party to help raise funds for his School of Music.

The guest list included leading personalities from the entertainment, political and business world.

Rather cold

There were Lord Harlech, impresario Bernard Delfont and his wife, Lord Goodman, chairman of the Arts Council, millionaire MP Mr. Robert Maxwell, Sir Jules Thorn, chairman of Thorn Electrical Industries, and Mr. Max Rayne.

Those who lost furs besides Miss Lee were Mrs. Carole Delfont, Lady Stanford, Mrs. D. Samelson, Mr. J. Norfolk and Mrs. Irene Kreiman, wife of Tesco's managing director.

"My reaction when I heard my mink coat had been stolen was that it would be rather cold going home," said Mrs. Delfont. "And it was jolly cold."

"Suddenly our car was not very far away."

After dinner, the guests had assembled in the Menuhin's drawing-room to hear recitals from the school's pupils. "The furs could quite easily have been taken then," said Mrs. Delfont.

The guests were in the middle of discussing fund-raising activities when the news of the theft was broken to them.

Mrs. Delfont said the thief's victims took their loss rather philosophically. "There just wasn't much we could do about it except admire the terrific nerve of the thief."

IN YOUR 48-PAGE STANDARD

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- Tally clerks: Egg prices ew
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Amusements Guide

Pages 20-21



MRS. JACQUELINE KENNEDY



MR. ONASSIS

'JACKIE KENNEDY TO WED ONASSIS'

BOSTON, Thursday.—The Boston Herald-Traveler reported today that Mrs. Jacqueline Kennedy, widow of the late President, will marry Greek ship-owner Aristotle Onassis before Christmas.

The newspaper said the marriage "could take place before the end of October." It added: "At all events it will take place before Christmas."

Mrs. Kennedy is 39. Mr. Onassis, 62, is a long-time friend of the Kennedy family and has visited them on many occasions. Last weekend he was a guest at the Kennedy home at Hyannis Port, Massachusetts.

Mrs. Kennedy and other members of the Kennedy family have frequently been guests of Mr. Onassis aboard his yacht Christina.

He has often taken Mrs. Kennedy sailing in the Mediterranean.

The newspaper said it learned of the impending marriage from "a completely knowledgeable source" which it did not identify further.

The paper added that the locale for the wedding remained a closely-guarded secret, but it was learned that New York, Maryland, and "a European city" had been under consideration by the couple.

No immediate comment was available from either Mrs. Kennedy or Mr. Onassis.

—News agency reporters.

News of the World reject bid

The News of the World Organisation today rejected the £25 million take-over bid from Pergamon Press.

News of the World directors, headed by Sir William Carr, have given preliminary consideration to the proposed bid and say that they are unanimous in considering the offer "completely unacceptable."

SEE PAGE THREE.

WANTED! Model Girls & Male Models



HAND IN GLOVE

When Carlos left his pair of gloves at the Olympic Village, he and Smith **decided to share**. This did mean that Carlos had to raise his **left hand**, deviating from the traditional salute.

er Kent. Photography: Russ Allen and Peter a sales rep. London Academy of Modelling top models in TV, hy.

ew talent. sidered, write, phone

or call. Interviews held daily Monday-Friday 10.00am-5.00pm Saturday 10.00am-3pm

LONDON ACADEMY OF MODELLING
143 New Bond Street London W1 01-499 4751

YESTERDAY'S PAPERS

On **16 October 1968**, two black American athletes court controversy at the Olympics

"I HAD A MORAL OBLIGATION TO STEP UP"

JOHN CARLOS

It's one of the most recognisable sporting photographs of the past half-century, the moment at which two US athletes – Tommie Smith and John Carlos – raised their arms in a 'black power' salute while on the medal podium at the 1968 Olympics in Mexico City. Each lifted a fist, encased in a black glove, to the sky as the notes of The Star-Spangled Banner filled the air.

The two sprinters – Smith had won 200m gold, Carlos the bronze – were prepared to sacrifice their personal achievements in order to raise the issue of racial inequality when the eyes of the world were on them. They had also removed their shoes, a symbolic gesture highlighting the ongoing poverty experienced by many black Americans.

Booed by the stadium crowd as they left the podium, the pair soon found themselves incurring the wrath of the International Olympic Committee who deemed their protest to be "a deliberate and violent breach of the fundamental principles of the Olympic spirit," and expelled them from the Games. The athletes did, however, have solidarity on the podium itself. The silver medallist, Australian Peter Norman, wore a human rights badge during the medal ceremony in support of Smith and Carlos. When Norman died in 2006, the two Americans were pall-bearers at his funeral.

"I had a moral obligation to step up," an unrepentant Carlos told *The Guardian* more than 40 years later, emphasising he was fulfilling a duty that October day in Mexico City. "Morality was a far greater force than the rules and regulations they had." ☉

BLACK POWER

RIGHT: Smith celebrates his win as he crosses the finish line

BELOW: Smith and Carlos carry the coffin of silver medallist Peter Norman



LASTING RESPECT

The pair had warned Norman of their intentions on the podium, and though they had expected to "see fear," Carlos said "I saw love". Norman told them **"I'll stand by you,"** and wore a human rights badge in support.

1968 ALSO IN THE NEWS...

5 OCTOBER Police attempt to break up a civil rights march in Derry, Northern Ireland with use of water cannon and batons, described by one MP as "stormtrooper tactics at their worst".

11 OCTOBER Apollo 7 launches from Cape Kennedy in Florida, becoming the first manned Apollo mission. The 11-day flight is also the first to beam pictures back from space for live broadcast on TV.

25 OCTOBER Having already performed live as The New Yardbirds, four young musicians play their first-ever gig as Led Zeppelin at Surrey University's original site in Battersea.



GRAPHIC HISTORY

The barrier-breaking plane in facts and figures

1969 CONCORDE GOES SUPERSONIC

The Anglo-French plane took off with a boom when it made its first supersonic flight on 1 October 1969. So began a career of over three decades during which travel was transformed...

FACT FILE

MAIN OPERATORS: British Airways (BA) and Air France (AF)

FIRST COMMERCIAL FLIGHT:

21 January 1976

FINAL COMMERCIAL FLIGHT:

24 October 2003

RANGE: 4,143 miles

ENGINES: Four Rolls-Royce/SNECMA Olympus 593s, each capable of producing 38,000lbs of thrust

TAKE-OFF SPEED:

250mph

CRUISING ALTITUDE:

50,000 feet

WING SPAN: 25.5 metres

CHASING THE SUN

On 30 June 1973, Concorde was chartered to **pace the total eclipse of the Sun** across Africa, allowing scientists their first sustained view of the Sun's corona.

FLYING HIGH

Concorde's maximum cruising altitude was around 60,000 feet. That's **twice as high** as subsonic commercial planes. From that height, passengers could clearly **see the curvature of the Earth**.

5,000

THE TOTAL HOURS OF TESTING TO WHICH CONCORDE WAS SUBJECTED BEFORE BEING CERTIFIED FOR PASSENGER FLIGHT. IT REMAINS THE MOST TESTED AIRCRAFT EVER

DARK DAY

On 25 July 2000, a Concorde flying from Paris to New York City **crashed outside the French capital** after the fuel tank ruptured. All **109 people on board** were killed, along with four on the ground.



PLANE PRESERVATION

After the Concorde programme was retired in 2003, **BA's fleet of seven planes** was dispersed to different **trans-Atlantic destinations** to be preserved – Barbados, Edinburgh, Bristol, Heathrow, Manchester, New York and Seattle.

IN THE AIR TONIGHT

In order to perform at both the Wembley, London and Philadelphia, Pennsylvania Live Aid concerts **on the same day** in July 1985, performer **Phil Collins** hopped on a transatlantic Concorde service.

0001: LHR - BAH

Concorde **first flew commercially** on 21 January 1976, when BA flew a service from **Heathrow to Bahrain** and AF went from Paris to Rio.



ROUND THE WORLD

AF Concorde holds the record for the fastest circumnavigation by passenger aircraft. On 15-16 August 1995, the supersonic plane jetted around the world in 31 hours, 27 minutes and 49 seconds, carrying 80 passengers.

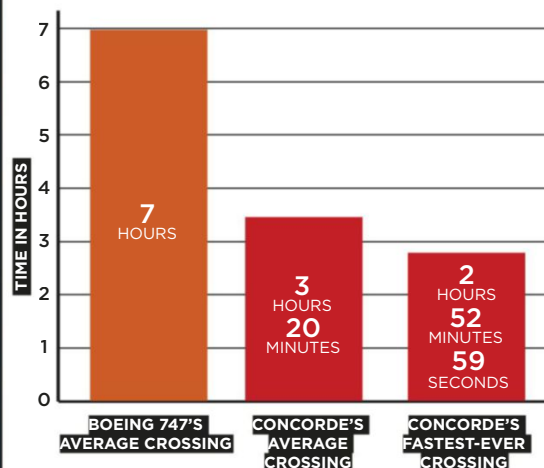
50,000

THE APPROXIMATE NUMBER OF FLIGHTS MADE BY BA'S CONCORDE

STYLE SETTER

In 1976, the renowned coiffeur Pierre Alexandre created the 'Concorde' hair style - a permé, soft and pointed look.

TRANSATLANTIC TIMES



2.5 MILLION

THE NUMBER OF PASSENGERS WHO EXPERIENCED SUPERSONIC FLIGHT IN BA'S CONCORDE

718

The number of Concorde flights taken by **Frederick W Finn**, who holds the record for the most supersonic passenger journeys. He always sat in seat 9A and took both the first and last Concorde flights.

FULL S...T...R...E...T...C...H
Due to the high temperatures reached on the airframe, Concorde would stretch up to 20cm during flight. It was painted white to help with heat distribution.

100

THE MAXIMUM NUMBER OF PASSENGERS CONCORDE COULD CARRY



TOP SPEED

Concorde's maximum cruising speed was **1,354 miles per hour**, or Mach 2.04 - that's twice the speed of sound.



CHAMPAGNE AND CAVIAR

During the flights, gourmet dinners were served on **Royal Doulton bone china** and the vintage Champagnes flowed. A **typical menu** might include caviar, foie gras or **prime fillet of beef**.



WHAT HAPPENED NEXT?

How the affordable automobile transformed America and the world

1908 THE FIRST FORD MODEL T LEAVES THE FACTORY

Henry Ford embarks on revolutionising the methods of production – and delivers huge social change at the same time

Henry Ford was a proud man on 1 October 1908. It was the day that the first Model T, the totem vehicle of his Ford Motor Company, emerged into public view, through the doors of his factory in Detroit, Michigan. His dream – of producing a car that was affordable to the average middle-class American – was coming true. No longer would the motor car be the plaything of the rich and privileged.

Ford only needed to look at the order books to have that success confirmed. In the region of 15,000 orders were placed after that first car was unveiled, but he was almost the victim of his own success. As it stood, the company would be extremely hard-pressed to keep up with that phenomenal demand. Those early Model Ts were put together by hand, at the unproductive level of 11 vehicles per month. Ford needed to adopt drastic measures.

LIFE IN THE FAST LANE

At first, he invested in heavy machinery, which rapidly upped capacity. Within two years, 12,000 cars had left the factory. That year, 1910, Ford moved production to Highland Park, an area adjacent to Detroit. Three

years later, this vast 120-acre site was the location of the world's first moving assembly line. This was a significant milestone in car production. While previously it would have taken more than 12 hours for a single car to be constructed, it now took a mere 93 minutes. It was nothing short of a revolution.

The savings made by mass production meant that Ford was able to slash the car's purchase price in half, resulting in – of course – a flood of more orders in their hundreds of thousands. In 1927, the 15 millionth Model T rolled off the Highland Park Plant assembly line. The vision of a utilitarian mode of transport (Ford famously did away with such fripperies as colour – every car was black) was complete.

"I will build a car for the great multitude," he had proclaimed. "But it will be so low in price that no man making a good salary will be unable to own one – and enjoy with his family the blessing of hours of pleasure in God's great open spaces." In revolutionising industry (and making himself very rich), Henry Ford also granted middle America even greater freedom. 📍

RAMPING UP PRODUCTION

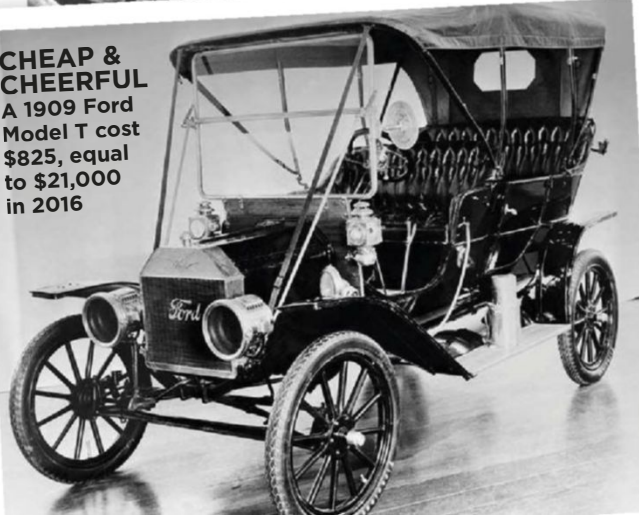
A 1913 Model T's body is lowered onto its chassis using an outdoors assembly ramp

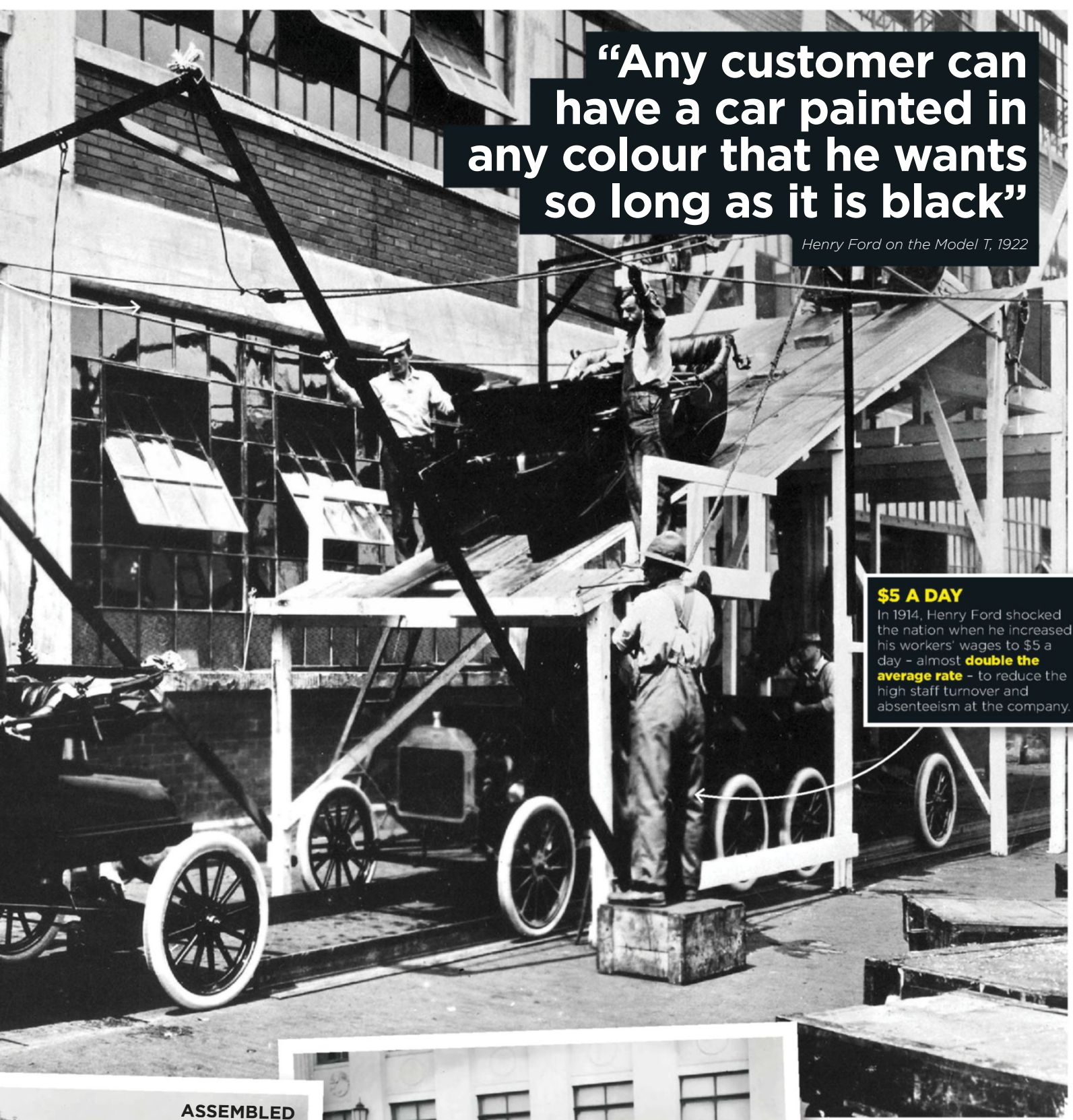
ACTION STATIONS

To increase productivity, workers were placed at appointed stations where **different parts** could be added to the **chassis**. It was pulled around between them using a strong rope.



CHEAP & CHEERFUL
A 1909 Ford Model T cost \$825, equal to \$21,000 in 2016





**“Any customer can
have a car painted in
any colour that he wants
so long as it is black”**

Henry Ford on the Model T, 1922

\$5 A DAY

In 1914, Henry Ford shocked the nation when he increased his workers' wages to \$5 a day – almost **double the average rate** – to reduce the high staff turnover and absenteeism at the company.

ASSEMBLED
Model Ts lined up outside
the Ford plant, 1913



UP A GEAR

Henry Ford and his son in the 15 millionth Model T, 1927. It bears little resemblance to the original, but the basic elements (a four-cylinder engine and planetary transmission) remain

THE EXTRAORDINARY TALE OF...

Was the **Miracle of the Sun** an optical illusion, the result of stratospheric dust, or a message from beyond?

1917 THOUSANDS WITNESS AN APPARENT MIRACLE IN PORTUGAL

When ten-year-old Lúcia dos Santos prophesied that the Virgin Mary would visit Earth, she could never have imagined the crowds who would flock to see

The Sun's disc did not remain immobile. This was not the sparkling of a heavenly body, for it spun round on itself in a mad whirl, when suddenly a clamour was heard from all the people. The Sun, whirling, seemed to loosen itself from the firmament and advance threateningly upon the Earth as if to crush us with its huge fiery weight. The sensation during those moments was terrible."

This was just one of the many eyewitness accounts of apparent extreme solar activity near the town of Fátima in Portugal just after midday on 13 October 1917. Similar reports were abundant – of the Sun spinning off its axis while giving off light of extraordinary colours. Another witness described the Sun resembling "the most magnificent firewheel that could be imagined, taking on all the colours of the rainbow and sending forth multicolored flashes of light." The spectacle lasted for around ten minutes before the Sun returned to its natural state.

But why had so many people (estimates were between 30,000 and 100,000 onlookers) gathered in this one spot in rural Portugal on this particular autumn day? The whole episode began six months previously when three young local children – ten-year-old Lúcia dos Santos and her younger cousins Francisco and Jacinta Marto – announced that they had witnessed an apparition of the Virgin Mary while they were tending their sheep. 'Mary' apparently told the children she would return on the 13th day of each of the next few months and that, on 13 October, would reveal herself to everyone, performing a miracle to confirm her identity.

DIVINE INTERVENTION

On each of the intervening months, the apparition supposedly reappeared but only the children were able to see her. But this didn't stop word spreading throughout the region – and possibly beyond – of what might occur come October.

"As if like a bolt from the blue, the clouds were wrenched apart, and the Sun at its zenith appeared in all its splendour"

Dr Manuel Formigão, a professor and priest, describes the event

LOCAL CELEBRITIES
The three children beneath an arch erected at the site of the apparitions



TO A NUNNERY

Lúcia lived out the rest of her days in a convent, and when she died in February 2005, a **day of national mourning** was declared.

Unsurprisingly to a staunchly Roman Catholic population, the prospect of a miracle was an attractive one, an event not to be missed. For them, it didn't matter that three young children were the source, with the widely reported visitations encouraging tens of thousands of people to arrive early in those fields on that October morning.

Again, the apparition reportedly appeared, but again, she was only seen by the children. The gathering remained in the dark, none the wiser. Then, according to Lúcia, the woman – who had identified herself as the Lady of the Rosary – threw her arms upwards, causing the young

girl to call out "The Sun!" This in turn caused tens of thousands of people to cast their eyes towards the skies.

TRICK OF THE EYE

While many confirmed that they had seen unusual solar activity, the observations weren't completely uniform. Some saw a kaleidoscopic range of colours. Some saw the Sun 'dancing' around the sky. Others saw it move in a more zigzag formation. Plenty of witnesses believed that they had seen it hurtling towards Earth and expressed fear that the planet was shortly to be annihilated. There were some who claimed that they had





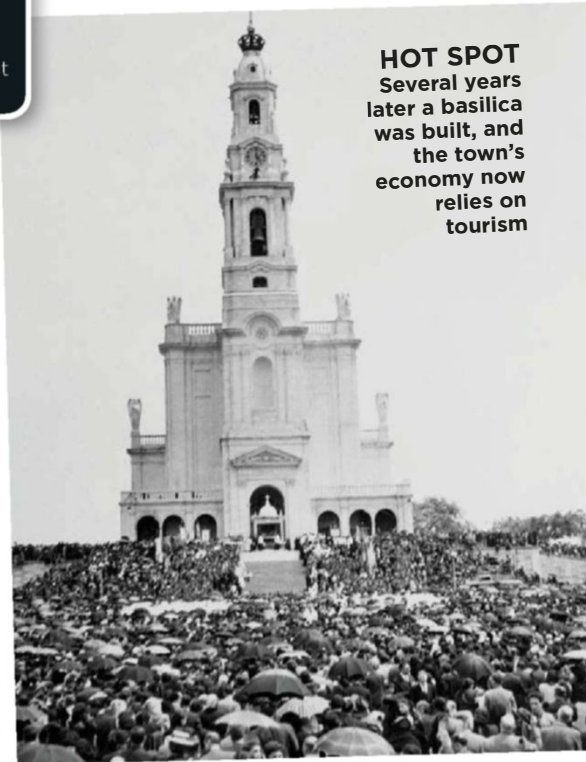
SUNNY BUSINESS

This photo, taken at 12.30pm on the day of the 'miracle', shows the Sun **in a position that would be "impossible"** at the time it was taken.

IN AWE
Tens of thousands gather in a field to witness the solar phenomena



HOT SPOT
Several years later a basilica was built, and the town's economy now relies on tourism



observed a combination of all of these phenomena.

Not everyone has accepted these curious events, eschewing religion in favour of science to explain what had actually happened. These sceptics have pointed out the optical effects a person's eye can experience having been told to stare at the Sun. These can include not only the appearance of the Sun 'dancing', but also the colour distortion caused by prolonged retinal exposure to such a bright object. To back up this hypothesis, there are no reports of astronomers or observatories in the local region – that is, those not observing the sky with the naked eye – witnessing any unusual behaviour in the Portuguese skies that day.

It's quite possible that these optical effects worked in conjunction with psychological expectations. After all, it wouldn't take an event too far out of the ordinary to be interpreted, by a crowd primed for a significant event, as evidence of supernatural intervention. Nor would it take much for a mild case of mass hysteria to break out – if one person claims to have witnessed something extraordinary, it's perfectly natural for the next person to claim to have experienced likewise. The effect simply mushrooms.

CLOUDED MEMORY

In considering the psychological angle, that particular day's meteorological conditions may also come to bear. One study

has suggested that, on 13 October 1917, a cloud of stratospheric dust changed the Sun's appearance, particularly its colouring. Reports from that day in China document these colours to include both blue and deep red. It may be that the most plausible explanation is that of coincidence – that such meteorological conditions occurred at the same time that a miracle had been predicted.

This scepticism was not shared by the Catholic Church who, 13 years later, officially designated the events in that Portuguese field as a miracle. By then, Lúcia had entered a Spanish convent for a life devoted to her religion. She subsequently wrote six volumes of memoirs, largely based on the events at Fátima, in which she

revealed that her mother had believed the visitations in 1917 to have simply been a case of ten-year-old Lúcia concocting them to get attention.

Whatever the truth, the episode continues to occupy a significant place in Portugal's modern history. When Sister Lúcia died in 2005 at the age of 97, there were campaigns for an upcoming parliamentary election to be temporarily suspended. That bewitching ten-minute period from almost 100 years ago remains a miracle to so many. 🌀



WHAT DO YOU THINK?

Do you think the apparitions at Fátima were a myth or a miracle?

email: editor@historyrevealed.com

HISTORY

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HISTORY
REVEALED

HUMBLE BEGINNINGS

How did William rise from being an illegitimate son to one of the most prominent figures in English history?



ARTISTIC LICENCE

This often-reproduced painting of William was created **towards the end of Elizabeth I's reign**. You can see it today in the National Portrait Gallery.



RISE OF THE CONQUEROR

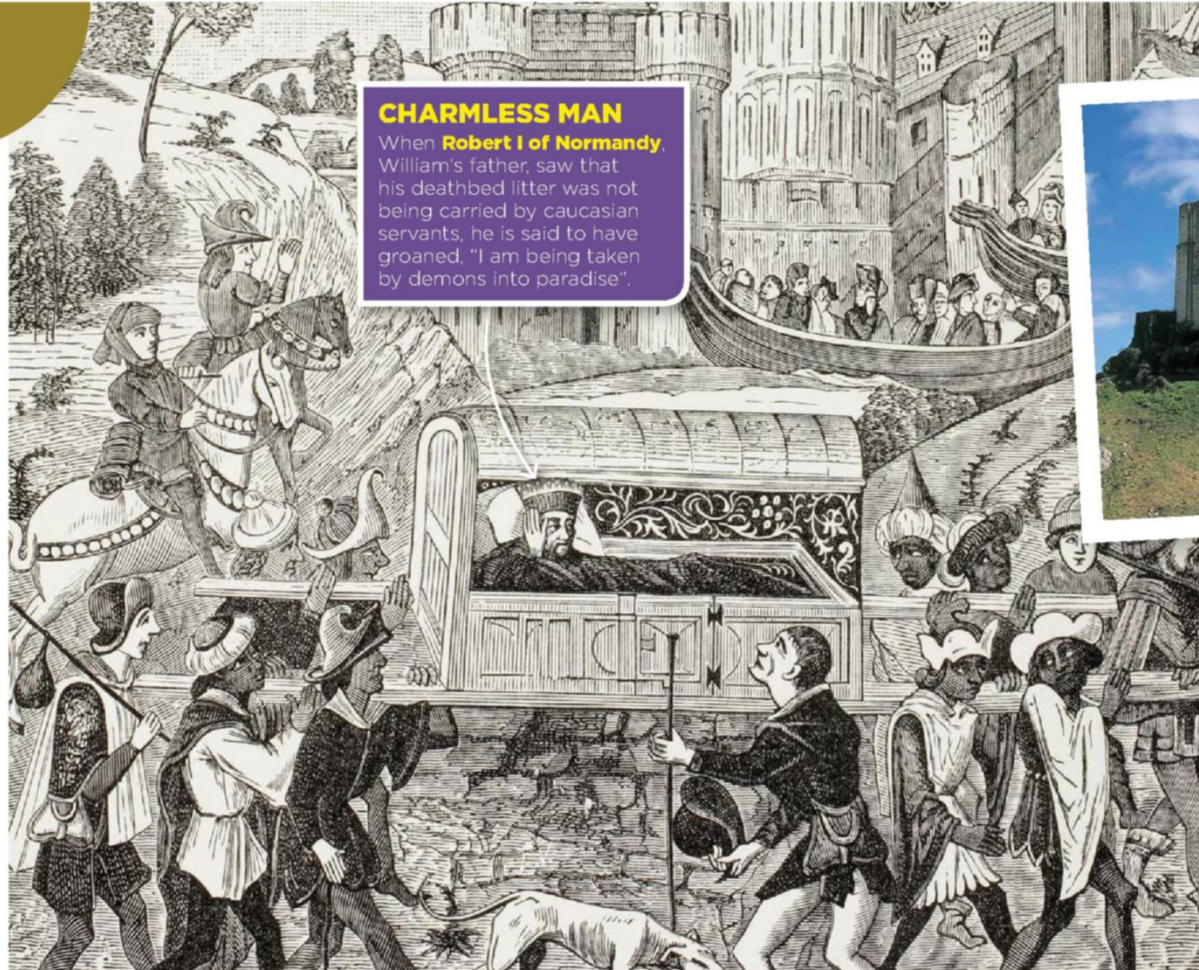
Julian Humphrys looks at how the illegitimate son of a tanner's daughter defied the odds to become a leading contender for the crown of England

Legend has it that Duke Robert I of Normandy was gazing out from the ramparts of his castle at Falaise when he spotted a mesmerisingly beautiful girl washing clothes in a nearby stream. As the most powerful man in Normandy, Robert was used to getting what he wanted – and he wanted the girl. She was Herleva, the daughter of a local tanner, and in 1027 she presented Duke Robert with a bastard son, who was christened William. Although Robert didn't go so far as to actually marry her, he did show great favour to Herleva and her family. In the end she married one of Robert's knights, Herlun de Conteville, and bore him two sons – Robert, who would become Count of Mortain, and Odo, who would be appointed Bishop of Bayeux. But William, her first-born, would rise even higher.

LEGITIMATE HEIR

As far as Duke Robert was concerned, William's illegitimacy counted for little. Before embarking on a pilgrimage to Jerusalem in 1035, he named the boy as his heir and ensured that he was fully accepted as such by his barons. It should be said that bastardy didn't carry the same stigma that it would in later years, and although William would always be notoriously touchy about the circumstances of his birth, this had more to do with his mother's humble origins. After making doubly sure of William's status by securing his formal recognition as heir by the King of France, Robert set off on his pilgrimage... And then died on the way home.

The elderly Archbishop of Rouen had been appointed as William's guardian, but when he also died in 1037, Normandy descended into anarchy as rival barons fought to gain control of the young duke.



CHARMLESS MAN

When **Robert I of Normandy**, William's father, saw that his deathbed litter was not being carried by caucasian servants, he is said to have groaned, "I am being taken by demons into paradise".

"Plots were hatched and rebellions, and all the duchy was ablaze with fire", wrote one chronicler. Robert had also arranged for a number of leading nobles to protect his young successor, but it soon became clear that they were unable to protect themselves, let alone William. Alan of Brittany died at a siege in 1040, his replacement Gilbert of Brionne was murdered while he was out riding and in 1041 William's tutor, Turolde, met a

MY OLD MAN

ABOVE: **Robert's death, depicted in a woodcut made at least seven centuries later** ABOVE RIGHT: **Falaise Castle, William's ancestral home in Normandy**

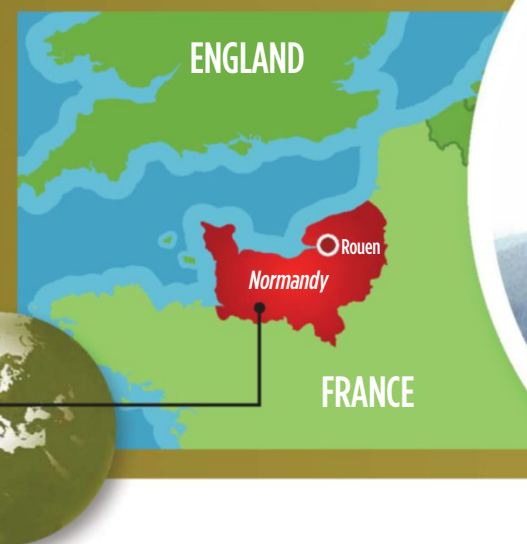
similar fate. According to the chronicler Orderic Vitalis, William himself later recalled, "Many times, for fear of my kinsmen, I was smuggled secretly out of the castle by night by my Uncle Walter [a brother of his mother] and taken to the cottages and hiding places of the poor, to save me from discovery by traitors who sought my death". His steward Osbern took to sleeping in William's room to protect him – a precaution that eventually cost him his life. One morning William awoke in Vaudreuil castle to find Osbern lying dead in a pool of blood – his throat had been cut during the night. It was a brutal, dangerous childhood and it undoubtedly shaped the character of the adult duke.

"A brutal, dangerous childhood shaped his character"

NORMAN WISDOM

Who were the Normans?

During the summers of the eighth and ninth centuries, bands of Vikings sailed in their longships from Scandinavia to plunder England. They also attacked the region that we now call northern France and, after years of seasonal raiding, they began to overwinter in that area. By the early 10th century, one Viking leader, Rollo, had become powerful enough to force the French king to cede him the region around Rouen. This became known as Normandy – 'the country of the Northmen'. The Normans, as they became known, were an adaptable lot. They gradually shed their Viking heritage, adopting a French dialect, converting to Christianity, mastering the art of mounted warfare and marrying into the families of their French and English neighbours. It was through the marriage of Emma, the daughter of Richard I of Normandy, to Ethelred the Unready that her great-nephew William based his flimsy dynastic claim to the English crown.





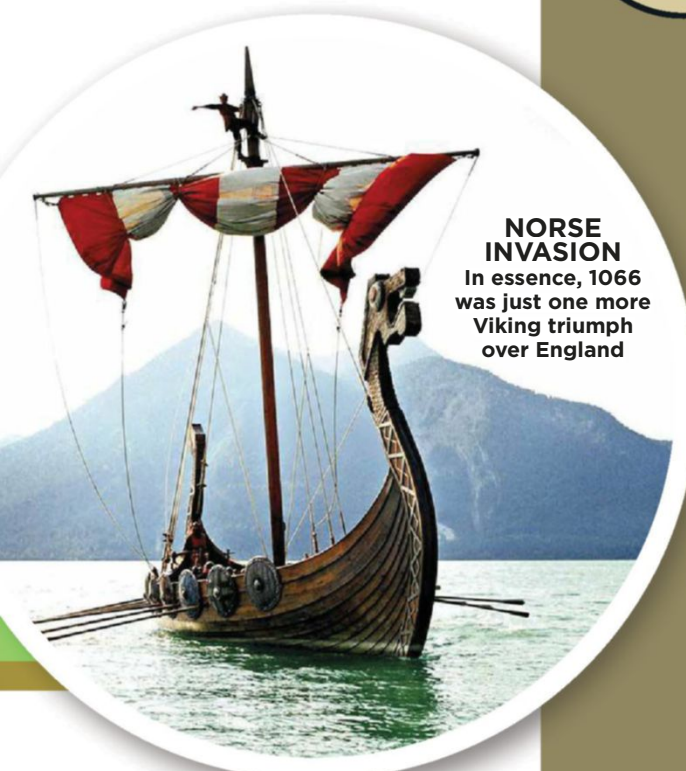
Despite the odds stacked against him, William somehow emerged unscathed from the long years of bloodshed and in 1042 he was declared to be of age. Helped by young men like William Fitz Osbern, the son of his murdered steward, he began to assert his authority. But he wasn't out of the woods yet.

REBEL YELL

In 1046, he was faced by a major rebellion, and this one aimed not to control him, but to replace him. The rising was led by his cousin, Guy of Burgundy, and was supported by most of the barons of western Normandy, who resented William's curtailment of their independence. William couldn't have been in a worse place when the revolt broke out, for he was staying at Valognes in the west of his duchy – right in the heart of rebel territory. Warned that he was in danger, the young duke leaped on his horse and rode hell-for-leather eastwards, skirting towns and

DID YOU KNOW?

William made an attempt to learn English when he was crowned, but French became the language of English nobility.

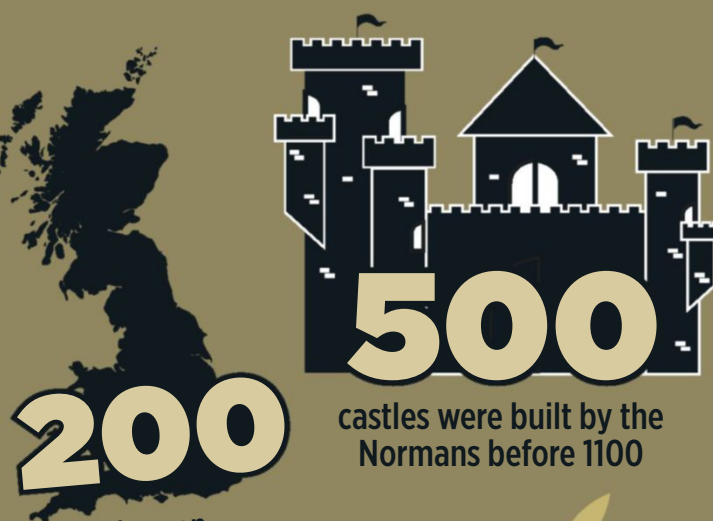


NORSE INVASION
In essence, 1066 was just one more Viking triumph over England

WILLIAM THE CONQUEROR NUMBERS GAME

8

William's age when he became Duke of Normandy



200

Norman barons held half England's land in 1086

castles were built by the Normans before 1100



13,418

places to be mentioned in the Domesday Book



3

battles fought in England in 1066: Fulford, Stamford Bridge and Hastings



9

known children born to William and Matilda, four boys and five girls



230

the length in feet of the Bayeux Tapestry



696

ships that carried William's army across the Channel in 1066



38

William's age at the Battle of Hastings



+ 59

William's age at his death



COVER STORY WILLIAM THE CONQUEROR

< fording rivers at night in case he was recognised and captured, and eventually reached the safety of his castle at Falaise.

Realising that the rebels were too strong to defeat on his own, William appealed to Henry I of France for help and in early 1047, the French king summoned his army and rode to William's aid. William scraped together as many troops as he could and together they headed west to confront the rebels. They met them at Val-ès-Dunes, south-west of Caen. The combined French and Norman army gained the upper hand and the rebels fled. William's knights pursued them relentlessly for miles. Many were mercilessly hacked down, others drowned as they frantically tried to escape across the river Orne. One chronicler wrote that so many bodies were floating in the river that its watermills came to a standstill. William then spent the next couple of years consolidating his victory and destroying the castles of his enemies. The battle was the making of William. He'd face more wars and invasions in the future but his status as duke was now secure.

WOONG MATILDA

He now had to find a wife. Clearly he needed one to supply him with an heir but a marriage had the added advantage of being a highly effective way of forging an alliance with another state. The ideal candidate was Matilda of Flanders. As a niece of the King of France and a relative of just about every royal family in Europe she was ideally placed to supply the

pedigree that the Norman duke so clearly needed to attain. What's more, her father, Count Baldwin of Flanders, would be a useful ally for William at a time when he needed one, for Geoffrey Martel, the dangerous Count of Anjou, had overrun the County of Maine and was threatening Normandy's southern border. The marriage also suited Baldwin for he in turn needed an ally against his enemy, the Holy Roman Emperor, Henry III.

The only problem was that nobody had thought to ask Matilda what she thought of the arrangement. And, if the chroniclers are to be believed, she wasn't the type of woman to go meekly along with her parents' wishes. It was written that when she was told

“Matilda provided the pedigree that William needed”

about the marriage proposal she flatly refused, saying loudly, and publicly, that she would not lower herself to marry a bastard. If this example of female defiance seems extraordinary, William's reaction to it was even more so. According to the Chronicle of Tours, he rode to Bruges where he came across Matilda as she was leaving church. Without saying a word, he dragged her

DID YOU KNOW?

Two of Matilda and William's children would later become the kings William II and Henry I.

POWER BEHIND THE THRONE Matilda governed Normandy in William's absence throughout 1066

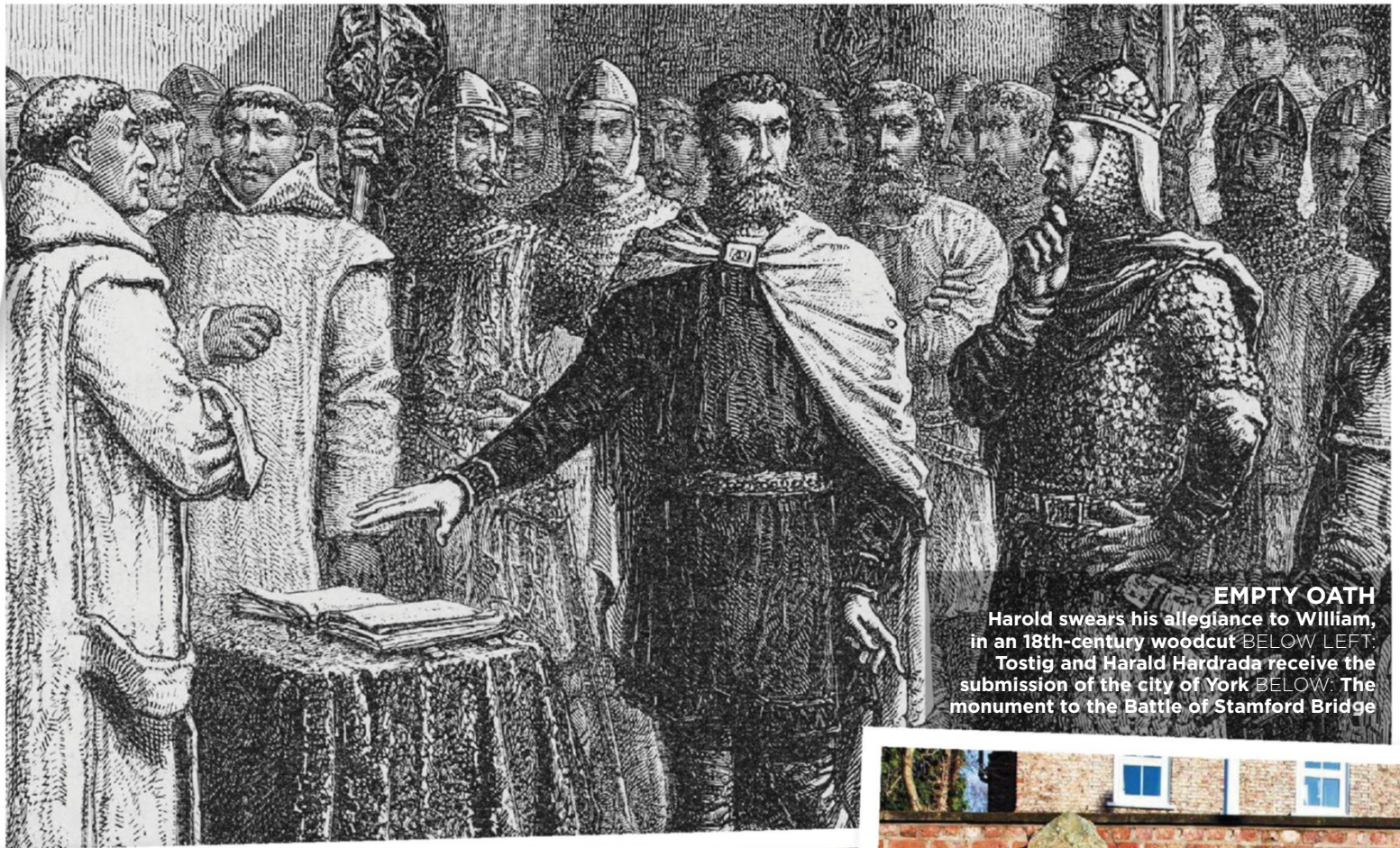


off her horse by her long tresses, rolled her in the mud and gave her a sound thrashing before riding off again. You would have thought that William's brutal behaviour would have simply strengthened Matilda's resolve to have nothing to do with the loutish duke. But, apparently not. No sooner had her dismayed father begun the search for an alternative husband than she suddenly announced that she would marry no one but William since “he must be a man of great courage and high daring to have dared to come and beat me in my own father's palace”. Whatever the truth is behind this extraordinary episode, the marriage was back on. There was just one problem – Pope Leo IX had banned it. The official reason for this



BARON HOPES

Henry I and William trounced the rebellious barons at the Battle of Val-ès-Dunes in 1047



EMPTY OATH
Harold swears his allegiance to William, in an 18th-century woodcut. **BELOW LEFT:** Tostig and Harald Hardrada receive the submission of the city of York. **BELOW:** The monument to the Battle of Stamford Bridge.



A BRIDGE TOO FAR

The **village of Stamford Bridge** is actually seven miles outside York, and 273 miles from Hastings. If it was nearer, who knows what 1066 would mean to us now?



FAMILY AFFAIR

Meet the Godwinsons

Harold Godwinson, William's rival for the English throne, was the second son of Earl Godwin of Wessex, a Sussex man who had risen to prominence in the service of King Cnut. Godwin was a skilled and ruthless political operator. By hook or by crook he managed to keep on the right side of both of Cnut's successors as king of England, Harold Harefoot and Harthacnut, and in 1042 he supported Edward the Confessor's accession to the throne. In 1045, the Godwinson family influence was strengthened further when Godwin's daughter Edith married King Edward.

Harold had been made Earl of East Anglia in 1043, and a few years later his

lands and responsibilities were increased thanks to the scandalous activities of Swein, his elder brother. Swein's many outrages included the murder of a cousin and the abduction of an abbess, and when his misdeeds saw him forced into exile, much of his West Midlands earldom was given to Harold.

In 1051, quarrels with the Norman supporters of Edward the Confessor led to the temporary exile of the Godwinson family but they were too powerful to be sidelined for long. They soon forced their way back into court and when Earl Godwin died in 1052, his family was the wealthiest and mightiest in the kingdom. Harold

became Earl of Wessex, while his brothers Tostig, Leofwine and Gyrth were Earls of Northumbria, the South East and East Anglia respectively.

When the Northumbrians rebelled against Tostig in 1065, Harold backed them and his brother was driven into exile. Tostig was later killed at Stamford Bridge, fighting alongside Harold Hardrada, Harold's Norwegian rival for the throne.

When Edward the Confessor breathed his last at the start of 1066, although others may have had a better dynastic claim to the throne, Harold's power and influence was so great that he was immediately offered the crown.

was consanguinity, ie the couple were related. But as nobody has been able to find a credible genealogical link between the pair it seems more likely that the Pope's motives had actually been political. The Pope had been appointed by Baldwin's enemy, the Emperor Henry III, and neither of them wanted to see Flanders strengthened through an alliance with Normandy.

While William might have been tempted to ignore the ban and plough on with his marriage, he was, like all his contemporaries, deeply religious, and the fact that Christendom's senior cleric had forbidden the match could not be taken lightly. A number of Norman bishops were duly sent to argue William's case

and Lanfranc, the prior of Le Bec and future Archbishop of Canterbury, made a personal visit to Leo in Rome. All this diplomatic activity seems to have done the trick, for the marriage eventually took place around 1051 after the happy couple agreed to each found a monastery by way of atonement.

MATCH MADE IN HEAVEN

The wedding was held in the border town of Eu. Matilda was about 20, William three years older. They must have looked an odd couple; William was tall and stocky while Matilda, though not the 4ft 2ins that some historians have claimed, was decidedly petite. William's character was a complex mix



DRESSING UP

ABOVE: Guy of Burgundy (Pope Calixtus II) led a rebellion against William in 1046

RIGHT: The Battle of Hastings is seen as perhaps the greatest battle on British soil, and a staple for historical re-enactment societies the country over

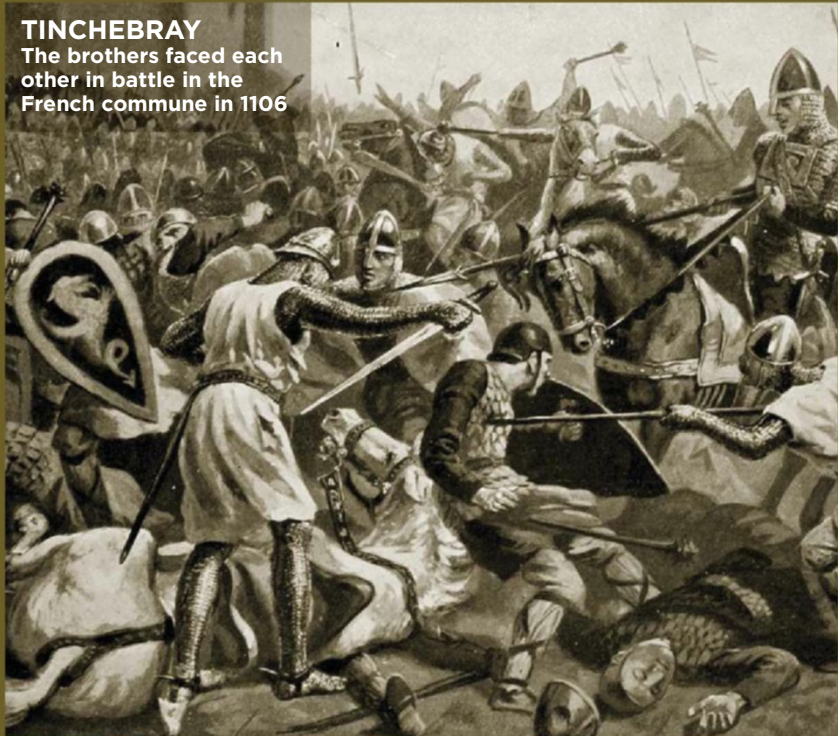


of piety and brutality and the clothes he wore for the wedding reflected this; he walked down the aisle wearing a gown embroidered with crosses but with an iron helmet upon his head. It appears that their marriage was remarkably successful. Matilda bore William nine known children and there's no evidence he kept mistresses or fathered any bastards. Matilda would prove to be much more than the kind of mere adornment she could have been seen as at the time. She acted as William's regent in Normandy during the invasion of 1066 (for which her father supplied troops) and was crowned queen of England in her own right in 1068. The independent spirit of this pint-sized princess never wavered and she briefly enraged William by sending money to her favourite son, Robert, who had rebelled against his father in 1078. She died in 1083 and was buried in Caen's Abbey aux Dames, which she herself had founded.

So by 1052, William had a wife, a son (Robert) and a duchy. He also had enemies. His first challenge came in southern Normandy where the Lord of Bellême had made his castles at Domfront and Alençon available to Geoffrey Martel. Only too aware that Geoffrey could use the castles as a base

TINCHEBRAY

The brothers faced each other in battle in the French commune in 1106



WILLIAM'S SONS

Boys will be boys

When William died in 1087, he was survived by three of his sons. A fourth, Richard, had been killed in a hunting accident in the New Forest. His eldest son, Robert (known as Curthose on account of his short legs), inherited Normandy, while England went to William's favourite son – the red-haired William Rufus. His third son, Henry, received no territory but was given a hefty sum of money instead, which he used to buy land in western Normandy from Robert. In 1100, William Rufus was killed in a hunting accident in the New Forest. At the time, Robert was returning from the First Crusade and his younger brother Henry took advantage of his absence to seize the crown of England. War between the two brothers inevitably followed and in 1106, Henry captured Robert at the battle of Tinchebrai. Henry gained Normandy while Robert would spend the remaining 28 years of his life as a prisoner of his brother.



DID YOU KNOW?

One of the first casualties of the battle was William's jester or minstrel, Taillefer.

ONE IN THE EYE

That **King Harold was shot in the eye** is something every English schoolchild knows – however, this ‘fact’ only comes from a possible misreading of the Bayeux Tapestry, and a recorded detail perhaps added centuries after the **Battle of Hastings**.

“In 1051, Edward the Confessor went so far as to name William as successor to the English throne”

for an attack on his duchy, William hurried south and rapidly captured Alençon castle. This was bad news for its defenders, for when the young duke had arrived outside their gates they had mocked the humble origins of his mother by hanging skins from their battlements and shouting “hides for the tanner”. William showed just what he thought of the joke by having the culprits brought before him and ordering their hands and feet to be lopped off. It was a calculated act of cruelty, and it had the desired effect. Shocked at what had happened, the town of Alençon quickly surrendered, Domfront soon followed suit, and nobody joked about William’s origins ever again.

William was soon faced with a second, equally dangerous, foe. For years, King Henry of France had been William’s staunchest supporter, but in 1052, he abandoned the duke and allied himself with William’s old enemy, Geoffrey

Martel. The reasons for this aren’t entirely clear but whereas five years earlier a disunited Normandy had been no threat to France, times had changed. William was now a force to be reckoned with and it may well be that Henry was also deeply worried about his close links with England. Edward the Confessor, the English king, was a distant cousin of William and had spent much of his early life in exile in Normandy. Furthermore, Norman sources suggest that in 1051 Edward, who had no children, had gone so far as to name William as his successor to the throne across the sea.

In a bid to curb the power of his increasingly noisy neighbour, Henry mounted a two-pronged attack on Normandy in 1054. He led one of the invading columns himself while his brother, another Odo, rode at the head of the other. Odo’s column had reached Mortemer, just 15 miles into Normandy, when it dispersed in search of plunder.

Seizing their chance, the Normans attacked the disorganised French, cutting them to pieces. When Henry heard the news he hurriedly retreated back to France. Three years later he invaded again. Joined by Geoffrey Martel, he marched into Normandy, looting and burning as he went. William gathered a large army, but even though his enemies were laying waste to his duchy, he avoided battle until he was sure the time was right. Eventually the invaders reached Varaville, about ten miles north-east of Caen, where they began to ford the river Dives. Unfortunately for the French the river was tidal and before all of Henry’s troops could cross, the rising tide covered the ford and split his army in two. As Henry and Geoffrey dithered over what to do next, William pounced decisively. His mail-clad knights swept down upon the rear of the divided French army, scattering it and putting it to flight. Once again Henry was forced to beat a hasty retreat. Normandy would not be invaded again until the very end of William’s life.

HOME AND AWAY

In 1060, William was blessed with two major slices of luck – his two great enemies, Henry of France and Geoffrey Martel, both died. As Henry’s successor was a child and Anjou was paralysed by a dispute over who should succeed Geoffrey, William no longer had any serious rivals in northern France. Two decades of sieges, skirmishes and pitched battles had turned William into a seasoned warrior and he was quick to seize the initiative. In 1063, he took over the county of Maine and two years later he mounted a successful campaign against Conan of Brittany. According to Norman sources, he was accompanied in Brittany by Harold Godwinson and it was at this time that Harold swore his infamous oath to support William’s claim to the English crown. But when Edward the Confessor died a few months later and William discovered that Harold had seized the throne, he immediately began making plans for an invasion. Most of his life had been a battle: for his dukedom, for his marriage, for his reputation, even for his life. Now he faced his biggest battle of all – for the English crown. 📍

TURN OVER FOR
THE STORY OF THE
NORMAN INVASION



THE BAYERN TAPESTRY AND THE NORMAN CONQUEST

The world's most famous tapestry was probably originally commissioned by William's half-brother, Bishop Odo, and was made in England – not Bayeux – in the 1070s. It tells the story (from a largely Norman point of view) of the Battle of Hastings and the events that led up to that bloody day

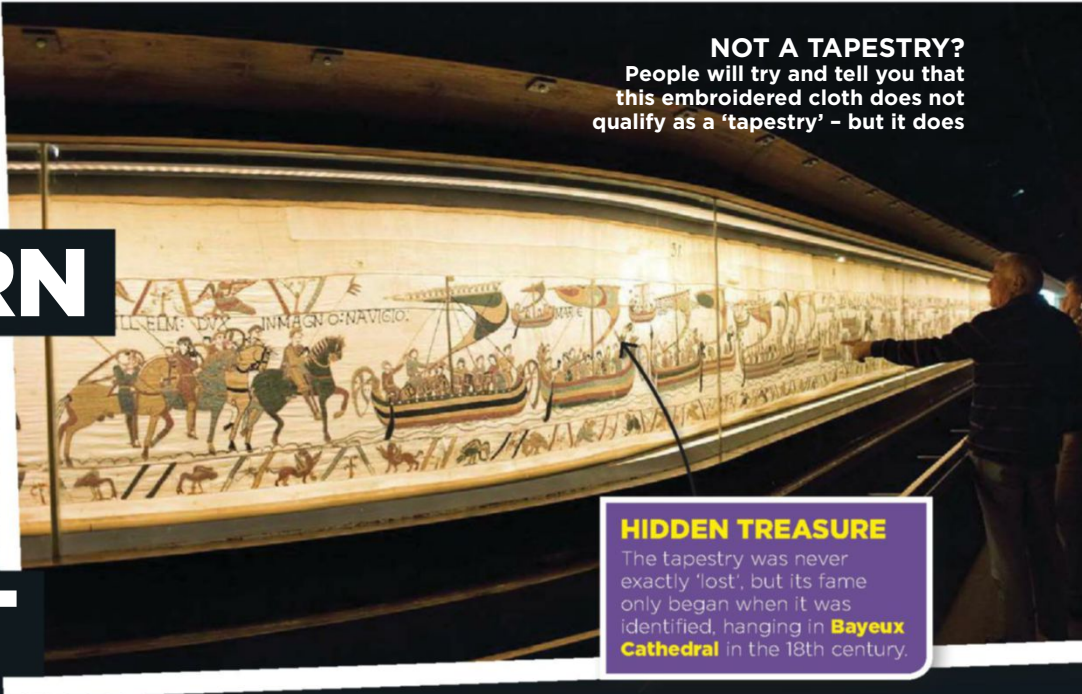
DID YOU KNOW?

Charles Dickens was not impressed when he saw the tapestry, sneering, 'It certainly is the work of very feeble amateurs.'



▲ 1 ROYAL MISSION

The opening scene of the Tapestry shows an elderly Edward the Confessor sending Harold on a mission to Normandy. According to Norman sources this is to confirm a promise he'd made 15 years earlier that William should be his successor.



HIDDEN TREASURE

The tapestry was never exactly 'lost', but its fame only began when it was identified, hanging in **Bayeux Cathedral** in the 18th century.



▲ 2 SHIPWRECKED

Harold is shipwrecked on the shores of Ponthieu, north of Normandy, and captured by its Count, Guy. William of Normandy later secures his release and Harold joins him on his campaigns in Brittany.



▲ 3 THE FATEFUL OATH

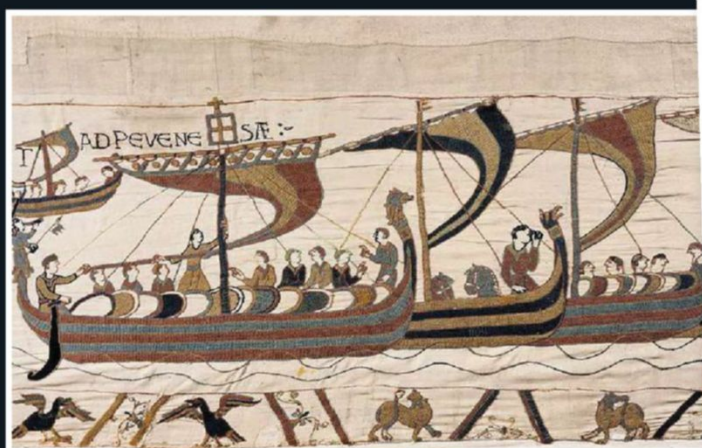
The Tapestry depicts the Norman account that before returning to England, Harold swore an oath on holy relics that he would support William as successor to Edward the Confessor as king of England.





▲ 4 SEIZING THE THRONE

Upon the death of King Edward the Confessor in January 1066, the Witenagemot, or Witan (assembly of Anglo-Saxon magnates) meets and chooses Harold to succeed him; he is quickly crowned in Westminster Abbey.



▲ 5 CROSSING THE CHANNEL

When he learns of Harold's accession to the throne, William resolves to press his claim by force. After securing papal support for his undertaking he assembles an army of Normans, French and Bretons and sets sail for England on 27 September. His flagship, the *Mora*, carries the papal banner.



▲ 6 SCORCHED EARTH

William's army lands at Pevensey and lays waste to the surrounding area to provoke Harold into fighting before he has assembled all his forces. Harold hurries down from Yorkshire, where he has just defeated an invasion by Harald Hardrada of Norway at Stamford Bridge, to confront William.



▲ 7 THE SHIELD WALL

Harold's army takes up a strong position on Senlac Ridge. Fighting on foot behind their shields they hold their ground, but are steadily worn down by the attacks of William's knights and foot soldiers, and the arrows of his archers. Harold's brothers Gyrth and Leofwine are amongst those killed.



▲ 8 DEATH OF HAROLD

Eventually the English shield wall is finally broken. Harold is cut down and the English army flees. Although it would take him another five years to secure his hold on the country, William has taken a decisive step in the conquest of England.

GET HOOKED

READ

Marc Morris's *The Norman Conquest* (London 2012) includes a well-written and balanced overview of William's life and conquests.

Tracy Borman's *Matilda: Queen of the Conqueror* (London, 2012) tells the story of William's wife, Matilda.



WHAT DO YOU THINK?

Why do you think 1066 is the ultimate red-letter date in the annals of British history?

email: editor@historyrevealed.com

LAST ONES STANDING

A watercolour by Kicking Bear, which depicts a fallen Custer and some of the surviving Native Americans

VICTORIOUS

Notes that were later added to the picture identify these men as Sitting Bull, Rain-in-the-Face, Crazy Horse and Kicking Bear.

FALLEN

Clad in his yellow buckskins, George Armstrong Custer lies dead amongst a pile of bodies.

Custer's Last Stand

Sitting Bull and Crazy Horse's defeat of the flamboyant Colonel George Custer at the Little Bighorn has become one of the most famous and controversial episodes in American military history. **Julian Humphrys** tells the story...

People in Washington were getting ready for a party. It was 4 July 1876 – the centenary of the birth of the USA – but news arrived that day that brought the celebrations to a halt. The US Army had suffered a devastating defeat in Montana at the hands of the Lakota Sioux and their Cheyenne allies. The Lakota called their victory the Battle of the Greasy Grass, but it would go down in history as the Battle of the Little Bighorn – or simply Custer's Last Stand.

BATTLEFIELD 25 JUNE 1876 LITTLE BIGHORN



BATTLE CONTEXT

When

25 June 1876

Where

Little Bighorn River, Montana, USA

Who

Native Americans: Lakota Sioux, Arapaho and Northern Cheyenne, led by Sitting Bull, Crazy Horse and Gall. c2,500 warriors

US 7th Cavalry: c650 men under Lt Col George Custer, Maj Marcus Reno and Capt Frederick Benteen

Why

US government campaign to round up 'hostile' Native Americans from the Black Hills

Result

Native American victory

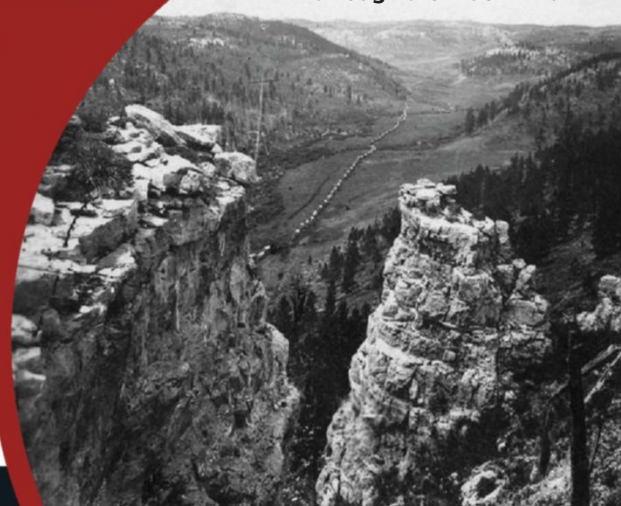
WHAT WAS THE FIGHTING ABOUT?

As with so many conflicts, gold lay at its heart

In 1874, an expedition led by George Custer confirmed that there were gold deposits in the Black Hills in South Dakota. The problem was that the hills were favoured hunting grounds and sacred territory to the Lakota and Cheyenne, and the ensuing influx of miners and entrepreneurs to the area was a direct violation of the Fort Laramie treaty of 1868. The government decided that it could only deal with the situation by purchasing the Black Hills, but the Lakota rejected the price that they offered. The US authorities responded by withdrawing their troops from the approaches to the Black Hills, allowing more miners to pour in. Some of the Lakota retaliated by attacking the miners, while

others left their reservations and joined Sitting Bull, Crazy Horse and their followers in the remaining buffalo-hunting grounds in Montana. At the end of 1875, the Commissioner of Indian Affairs ordered the Lakota and their allies to report to a reservation by 31 January 1876 or be considered hostile. When the deadline passed, the army took action.

GOING FOR GOLD Custer led the expedition through the Black Hills



HEAVILY ARMED

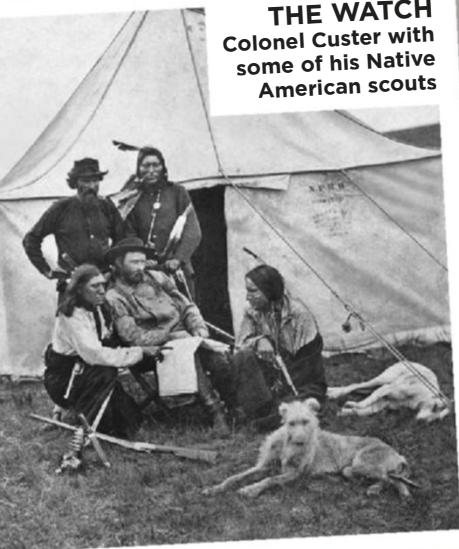
A Native American shoots one of Custer's men in the face with a revolver. He carries a rifle in his other hand.

Faced with a volatile situation following the discovery of gold in the Black Hills, the US authorities decided to force the Lakota Sioux and Cheyenne to the reservations set aside for them. Colonel John Gibbon would head east from Fort Ellis in Montana, General George Crook would strike north from Fort Fetterman, Wyoming and General Alfred Terry would head west along the Yellowstone River from Fort Abraham in Dakota. The 7th Cavalry, commanded by Lt Col George Armstrong Custer, made up the bulk of Terry's 900 men.

The government troops only had a sketchy idea of where their enemies were and had also underestimated their strength, which they reckoned to be no more than 1,000 warriors. But they had failed to take into account the fact that large numbers of warriors had left the reservations and joined Sitting Bull and his supporters. In fact, their main concern was that their enemies would scatter before they could be dealt with. But, encouraged by one of Sitting Bull's visions that foretold the



BATTLEFIELD 25 JUNE 1876 LITTLE BIGHORN



THE WATCH
Colonel Custer with
some of his Native
American scouts

of Rosebud Creek. On 22 June, believing that Crook was still on the move, Terry ordered Custer to take the 7th Cavalry south and west so that the Lakota could be caught between three converging columns. Significantly, Terry wasn't too detailed in the instructions he gave to Custer, saying he had no wish "to impose precise orders which might hamper your action when nearly in contact with the enemy." This was music to the ears of the impetuous Custer, who galloped away waving his hat excitedly.

Two days after leaving the main column, Custer's scouts gave him the news that he'd been itching to hear – they'd found evidence of large-scale movement to the west. Custer immediately set off in pursuit. It appears that his plan was to find where the Native Americans were camped, spend the 25th giving his saddle-sore troopers some rest, and then attack on 26 June, which was the day that Terry and Gibbon were expected to arrive in the area. At dawn on the following day, Custer's Native American scouts climbed some high ground near the Bighorn River and looked down into the valley below. The encampment was there all right, but it was much larger than anyone had anticipated. Custer was unimpressed by his

33

Native American
scouts accompanied
Custer's 7th
Cavalry

defeat of the white man, the Lakota were ready for a fight. On 17 June, Crook's men were resting on the banks of Rosebud Creek on the present-day border between Wyoming and Montana when they were suddenly attacked by the Oglala Sioux leader Crazy Horse with nearly 1,000 Lakota and Cheyenne warriors. The fighting went on for some six hours and both sides suffered around 100 casualties before the natives drew off. Crook claimed a victory but he fell back and took no further part.

HIGH HOPES

Meanwhile Terry and Gibbon's forces had linked up at the mouth

ROUNDED UP

Many believe that Crazy Horse led a flanking assault that ensured the deaths of Custer and his men

SPEEDY SHOOTER

The lever action of the legendary Winchester repeater rifle enabled the user to fire several shots before having to reload.

IN WITH THE OLD

Though some carried their traditional weapons of bows, lances, clubs, knives and tomahawks, they were far from outgunned.

KEY PLAYERS

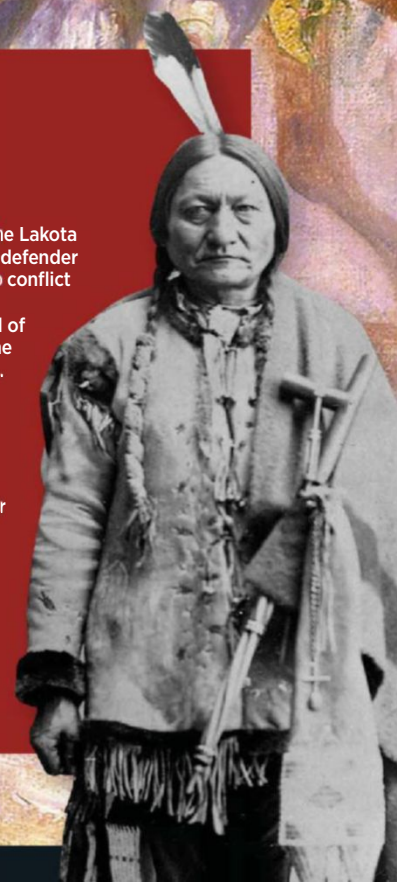
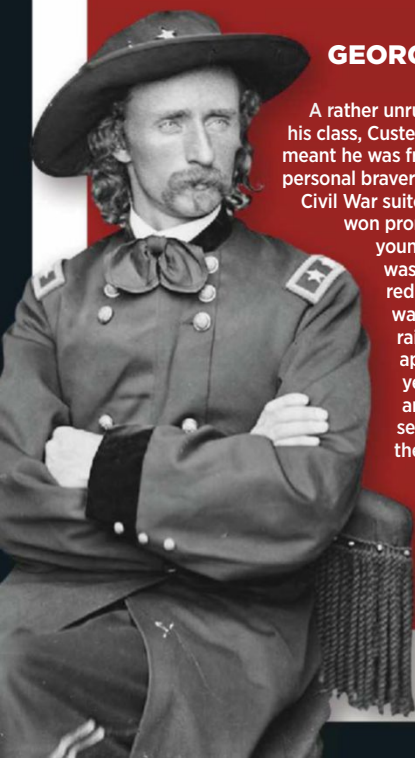
The men who led the two sides had very different backgrounds – and attitudes

GEORGE ARMSTRONG CUSTER

A rather unruly West Point cadet who graduated last in his class, Custer displayed a reckless temperament, which meant he was frequently in trouble with his superiors. Yet his personal bravery was never in question, and the American Civil War suited his devil-may-care attitude. He rapidly won promotion, and by the end of the war was the youngest major-general in the Union Army. It was only a wartime appointment, and he was reduced to the rank of captain, but in 1866 he was appointed Lieutenant Colonel of the newly raised 7th Cavalry. His somewhat cavalier approach to his responsibilities earned him a year's suspension, but he was soon reinstated, and in 1868 led a brutal attack on a Cheyenne settlement on the Washita River. In 1874, he led the expedition that discovered gold in the Black Hills, and set into motion the chain of events that would conclude with his death at the Little Bighorn. Even then he nearly missed the campaign, as he was temporarily relieved of command after accusing President Grant's brother of corruption.

SITTING BULL

A holy man and leader of the Hunkpapa division of the Lakota Sioux, Sitting Bull was a courageous and charismatic defender of the Native American way of life and first came into conflict with American soldiers and settlers in 1863. He later supported Red Cloud in his campaign to keep control of the Powder River in Montana, but refused to live in the reservation established by the Treaty of Fort Laramie. This brought him and his followers into conflict with American settlers as well as other tribes. A spiritual rather than military leader during the Little Bighorn campaign, Sitting Bull escaped to Canada following the government backlash. In 1881, he returned to the US, gave himself up and was held as a prisoner of war for nearly two years before being transferred to the Standing Rock Indian Reservation. In 1885, he briefly toured with Buffalo Bill Cody's Wild West show, where he was an instant hit and became a close friend of Annie Oakley, the famous sharpshooter. In 1890 fears that he might get involved with the subversive Ghost Dance movement led the authorities to attempt to arrest him, and he was shot and killed during the ensuing fracas.



SOFT TARGET

In a bid to force the Native Americans to surrender, Custer targeted the camp where their women and children were based.



7TH CAVALRY

Although the troopers of the 7th Cavalry had been issued with sabres, they had left them behind for the campaign. In battle they were trained to ride into action, then dismount and rely on firepower, with every fifth soldier holding the horses of his comrades. Their standard weapons were the breechloading Springfield carbine and the Colt .45 revolver. The Springfield certainly packed a punch but the standard of marksmanship in the 7th Cavalry wasn't high. Nor were matters helped by the fact that the Springfield was only a single-shot weapon, and this restricted the rate of fire the soldiers using it could achieve.

POOR SHOT

Custer's men primarily fought with their Springfield carbines, and were hindered by their low firing rate.

MOUNTED ATTACK

While the troopers of the 7th Cavalry were trained to dismount in battle, the Lakota and the Cheyenne preferred to fight on horseback.

"The encampment was there all right, but it was much larger than anyone had anticipated"

WEAPONS

Whereas Custer's men primarily fought with their Springfield carbines, archaeological investigations suggest the Lakota and Cheyenne used over forty different types of gun as well as bows and arrows.

SPRINGFIELD CARBINE

This US Army Springfield single-shot carbine was used at the Little Bighorn. 18 cartridges found by archaeologists on the battlefield have been forensically matched to this particular weapon.

.45 REVOLVER

This Smith and Wesson .45 caliber revolver was found, still loaded, on the battlefield in 1883. It may have been carried by a US cavalry officer or a scout.

BOW AND ARROW

At least half of the Native Americans in the battle carried bows. Very few arrowheads have been found by archaeologists, which suggests that they were picked up for reuse after the battle.





BATTLEFIELD 25 JUNE 1876 LITTLE BIGHORN

scouts' claims that "there are more Sioux than you have bullets," but what did worry Custer was the fact that it seemed his force had been spotted by a group of natives who had been riding outside the camp. In Custer's eyes there was no time to be lost. If the news got back to the camp, his enemies would scatter and any chance of rounding them up would be lost.

So Custer changed his plan. Abandoning the idea of a day's rest, he resolved to attack as quickly as possible. After sending one group of men south under Captain Benteen to cut off any retreat in that direction, Custer ordered Major Reno to move up the valley along the Little Bighorn River to attack the lower end of the encampment. Custer himself took the rest of his command and moved north of the river to attack the other end.

SHOCK TACTICS

Reno's troops crossed the river about two miles south of the camp and began advancing towards its southern end. Those inside the village were taken completely by surprise (it was a scorching hot day and many had been bathing in the river), but soon hundreds of warriors were pouring out to confront Reno's men who had dismounted and formed up in a skirmish line. Heavily outnumbered and in danger of being outflanked and surrounded, Reno pulled his men back to a line of trees on the river bank that offered better protection. Even so

they were taking casualties. One of those killed was Reno's scout, Bloody Knife. He was hit in the head by a bullet and his brains splattered all over Reno's face and uniform. Before long the warriors were in the trees and Reno ordered his men to retreat again, this time to the bluffs across the river. The retreat turned into a rout as Lakota and Cheyenne warriors rode after the fleeing troopers, shooting them at close range or pulling them to the ground to be finished off by club, knife or lance. Those that made it across the river scraped out holes in the dusty ground for cover and opened fire to hold off their pursuers, but 38 men had been killed outright.

Meanwhile Custer was in sight of the encampment. It appears that his plan had been to attack the rear of the camp where he deduced that the women and children would be gathered. He must have concluded that if the warriors thought that their families were under attack, there was a good chance that they would give up fighting in order to rescue their children or even lay down their arms. But Custer had reckoned without the sheer size of the camp and the numbers of warriors in it. Joined by some of those who had driven back Reno a little earlier, hundreds and hundreds of warriors swarmed out of the camp, intent on wiping out the men who were threatening not only their way of life but also their families. Had they been in a prepared defensive



NO ESCAPE
Custer's men were cornered on a hill, and all were slaughtered

"Caught in the open and outnumbered, their fate was sealed"

position, the soldiers would probably have had a chance of seeing them off, but caught in the open and hugely outnumbered, their fate was sealed.

LAST STAND

More words have been written about what happened next than possibly any other American military action in history, but we can only guess at the actual chain of events. None of Custer's party survived to tell their story, but Native American accounts and archaeological finds do give us some clues. It appears that the five companies of Custer's force were driven uphill away from the river and annihilated in a running fight that lasted for less than an hour. Eventually Custer and 40-50 of his men, the survivors of the

original force of 210, were cornered on the hill where the US Cavalry monument now stands. This was Custer's famous 'Last Stand'. Many accounts suggest that their retreat had been blocked by warriors sweeping the battlefield. Some seem to have made a desperate attempt to break out and escape but all were killed in minutes.

As the men under Custer's immediate command fought and died, the rest of the 7th Cavalry held out on a hill two miles or so to the east. Reinforced by Benteen's soldiers, Reno and his men dug in and for two days they repelled every attempt to dislodge them. The battle turned into a long-range sniping contest, and the Lakota were forced to abandon their ponies and rely on their bows and rifles. Finally, as the sun set on 26 June, the fighting petered out. With their supplies running out and little grass left for their ponies to eat, the Lakota and their allies began to disperse, scattering across the Plains in small groups. When Terry and Gibbon arrived on the battlefield a day later, the victors of the Little Bighorn were nowhere to be seen. 🎯

268

The number of soldiers in Custer's force who were killed in the battle

WHAT HAPPENED NEXT?

The US army were not about to let the natives win

Custer's Last Stand was in many ways the last stand of the Lakota Sioux as well. His defeat came as a profound shock to the US authorities, and they responded by pouring troops and resources into the region. Led by Colonel Nelson Miles, the ensuing winter campaign broke the

back of Lakota resistance – within a year most of the so-called 'hostiles' had either followed Sitting Bull across the border into Canada or given themselves up. One of these was Crazy Horse, who was subsequently killed while under arrest at Fort Robinson. The Black Hills



TALK TO THE HAND
Colonel Nelson Miles tries to negotiate with Sitting Bull

were taken by the government, and the Native Americans received no compensation at all.

GET HOOKED

Find out more about the battle and those involved

READ:

For a detailed look at the battle and the fallout that followed it, try James Donovan's *A Terrible Glory: Custer and the Little Bighorn*, 2008.



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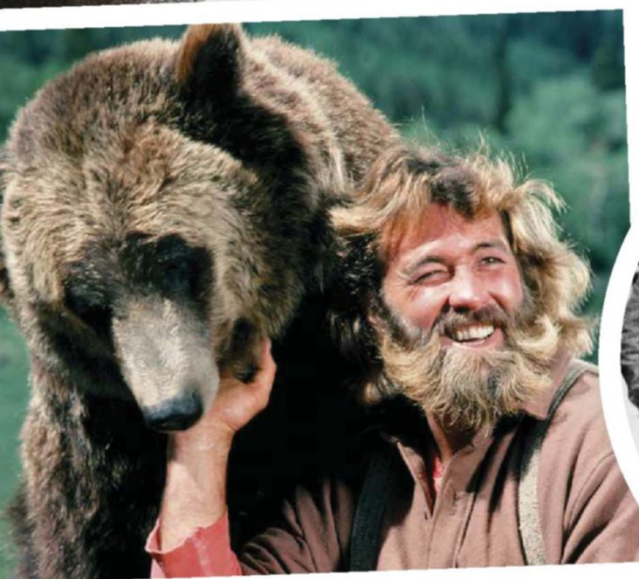
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Grin and bear it

Far from being average bears, these ten cuddly critters have found fame on screen, in literature and even in battle



GRIZZLY'S GRIZZLY

It's not often that you come across a man named Grizzly with a pet bear named Ben. While in pursuit of a new life in the American West, John "Grizzly" Adams found companionship not in the other gold rush forty-niners, but in a bear cub he had captured while hunting. The bear, which he decided to call Ben Franklin, became so loyal to his master that he risked his life saving Grizzly from another, fiercer grizzly.

BYRON'S PET BEAR

When Lord Byron was told that he was not allowed to bring his beloved pet dog to university, the quick-witted poet devised a plan to ensure that he would never be without a furry friend. As the rules only specified that cats and dogs were forbidden, he instead managed to acquire a tame bear. Writing of it, he said: "I have got a new friend, the finest in the world. When I brought him here, they asked me what I meant to do with him, and my reply was, 'he should sit for a fellowship'."



Upon purchasing his new pet, Byron proceeded to parade him around campus on a chain, terrifying the other students.



The Paddington Bear books have been translated into 30 languages, and 30 million copies have been sold worldwide.

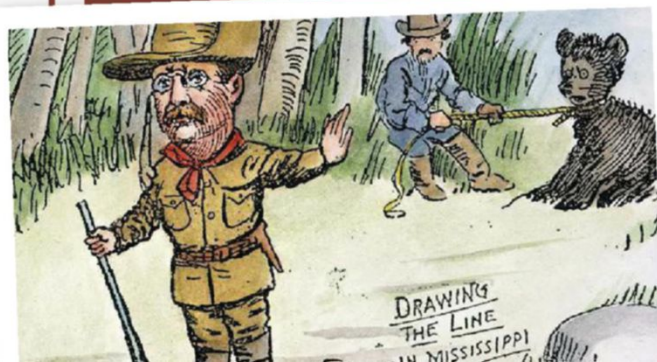
WOJTEK

With a penchant for drinking and smoking, Wojtek had much in common with many other privates serving in World War II – but this private was a bear. When hunters killed his mother, Wojtek was adopted by members of the Polish II Corps. After being raised on condensed milk, the bear developed a taste for wine and beer, and would even take the odd puff on a cigarette (before promptly swallowing it). As the army prepared to push forward into Italy, Wojtek was officially drafted into the ranks to cheat the 'no pets on camp' rule, and was commended for his bravery after helping to carry ammunition into battle.



THE FIRST TEDDY

Considering he hated his nickname, it's ironic that Theodore Roosevelt has been immortalised in the eponymous teddy bear. The link came about following a hunting trip in 1902, during which the President had refused to shoot dead a captured bear. A cartoon relating the tale was published in *The Washington Post*, inspiring Morris Michtom to create a stuffed toy in his honour. Roosevelt gave him permission to use his name, and the rest, as they say, is history.



PADDINGTON

The award for the most polite individual on the list goes to a certain duffle-coat-wearing, marmalade-eating, Peruvian spectacled bear. Yes, he has the advantage of speech and, well, being fictional, but his formal manner has earned him worldwide respect. His creator, Michael Bond, found inspiration in a lone teddy bear at London's Paddington Station in 1956. Ten days later, his well-mannered character had been brought to life. But don't be deceived, this bear drives a mean bargain, and one of his 'hard stares' may leave you questioning every decision you ever made.



ROCKY

When members of the 187th Airborne Regimental Combat Team decided that they needed a mascot, they went to the zoo and asked for a bear. Her name was Rocky, and during her 'tour of duty' carried out five parachute jumps, qualifying her for official paratrooper status. Despite this, she apparently disliked the jumps, as she once gnawed the boot of a man who had 'helped' her out of the plane.

BART

Like so many celebrities, Bart was born into stardom. His mother was an actress, so it was only natural that he should follow in her footsteps and find fame on screen. He made his debut in the TV series *The Life and Times of Grizzly Adams* while still a cub, and later appeared alongside names like Robert Redford, Daryl Hannah and Brad Pitt. His career reached its zenith in 1988, when one of the Academy Awards' voting members nominated him for his portrayal of a bear in, erm, *The Bear*. Though the prize was snatched by a human, Bart's contribution to cinema will be forever cherished.



Smokey was rehomed at the National Zoo in Washington, D.C. where he received so much fan mail that he was given his own zip code.

SMOKEY BEAR

Created in 1944 as part of a campaign to educate the US public about the dangers of forest fires, Smokey was initially just a cartoon. That was until 1950, when an American black bear cub was rescued from a wildfire in the Capitan Mountains. With his paws and hind legs singed, the bear was originally called 'Hotfoot Teddy', but was later renamed Smokey after the mascot.

WINNIE

Winnipeg the bear, or Winnie as she is better known, provided the inspiration for one of literature's most loved characters. After being purchased by a Canadian lieutenant at the start of World War I, Winnipeg accompanied him to England, where she was donated to London Zoo. She caught the attention of a young boy named Christopher Robin Milne, who changed the name of his teddy to Winnie-the-Pooh. He in turn became the subject of his father's famous children's books.



URSA MAJOR

At over 13,000 years old, and with an excellent vantage point, this bear has seen a lot. Ursa Major, or 'the great she-bear' as her name means in Latin, is the third largest constellation in the sky, and home to dozens of galaxies. For millennia she has been used to locate the North Star, setting lost travellers back on the right path and lighting their way. It is thought that her origins lie in the Paleolithic era, when bears were worshipped.



   **WHAT DO YOU THINK?**

Who is your favourite bear from history? Are there any that we missed?

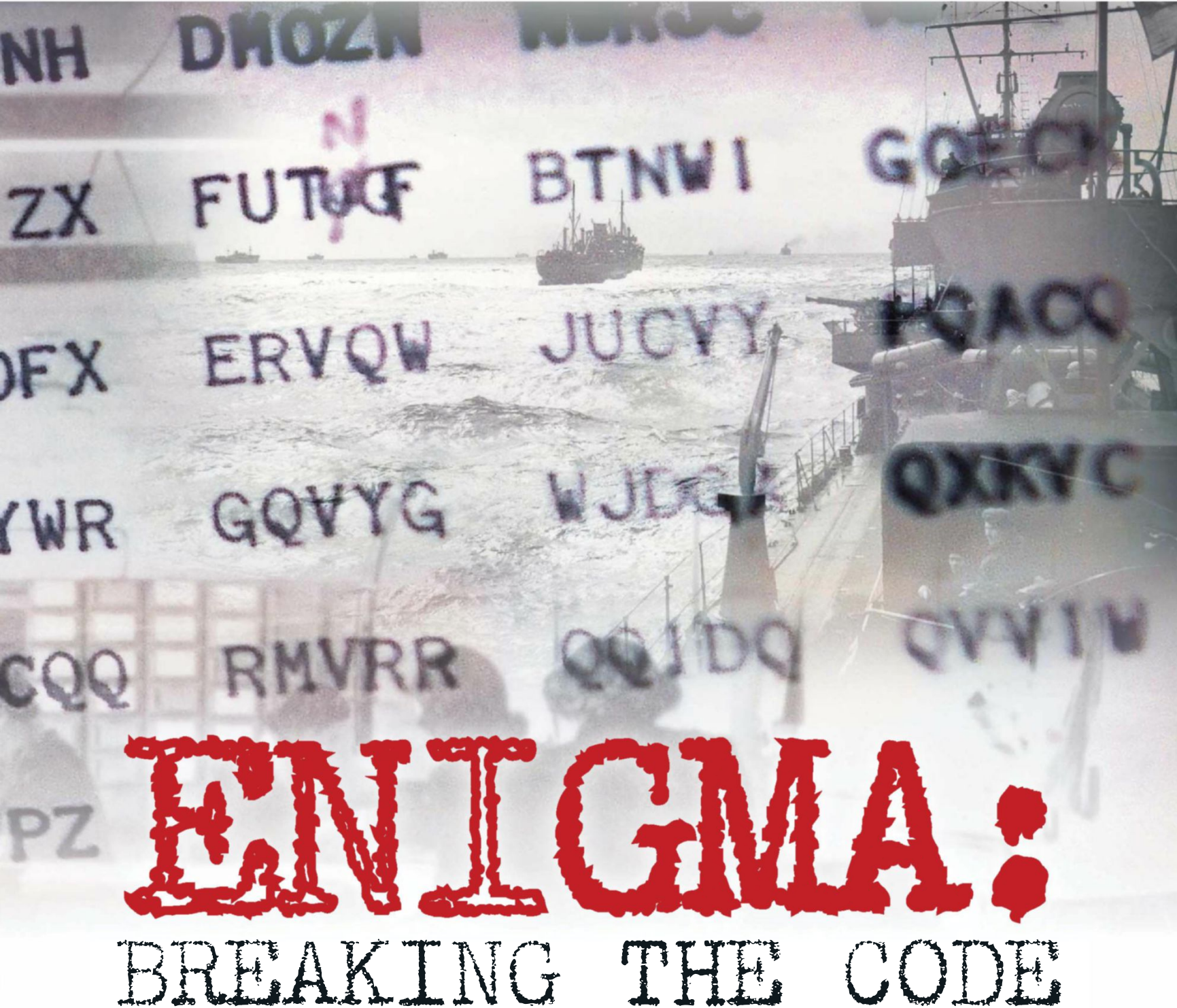
Email: editor@historyrevealed.com

A woman with dark hair, seen from the back, is working on an Enigma machine. The machine's keyboard is visible in the foreground, with letters like Q, W, E, R, T, Y, U, I, O, P, A, S, D, F, G, H, J, K, L, M, N, B, V, C, X, Z, and spacebar visible. Overlaid on the image is a grid of letter combinations, likely representing a cipher or a key. The combinations are arranged in rows and columns, with some letters appearing in multiple positions. The background is slightly blurred, showing a desk and some papers.

BREAKING THE ENIGMA CODE

SILENT BATTLE

In order to stop German U-boats from prowling the Atlantic, it was vital for the British to break the Enigma code



One of the toughest missions of World War II took place in the British countryside, as the codebreakers of Bletchley Park fought to end the Battle of the Atlantic. **Jonny Wilkes** reveals their secrets

The alarms ring out over the Atlantic at midday, 9 May 1941, sending sailors rushing to action stations. A German U-boat, lurking beneath the surface of the choppy waters, is attacking their convoy south of Iceland. Before the crews of the three dozen merchant ships and their escorts know the position of the enemy submarine, two vessels are smashed by torpedoes and sink. The 28-year-old captain of U-110, Fritz-Julius Lemp, congratulates his men and orders another salvo.

Before that happens, though, the hunters become the hunted. Knowing the dangers of crossing the Atlantic – where ‘wolfpacks’ of Nazi Germany’s Kriegsmarine prowl and pounce without warning – Royal Navy destroyers and corvettes are escorting the convoy for part of its voyage to America. They pepper U-110’s position with depth charges, forcing Lemp to order the now-damaged sub to surface and his men to evacuate with the words “Last stop, everybody out!” as if he were a bus conductor. The crew pour out of the hatches, and 15 are

killed (including Lemp) by leaping into the water and drowning, or by the heavy fire from the advancing HMS *Broadway* and *Bulldog*. The attack over, a boarding party is dispatched to collect anything left by the fleeing crew, who hoped that they would go down with the sub.

What Sub-Lieutenant David Balme and his party retrieve turns out to be so remarkable that the capture of U-110 (termed ‘Operation Primrose’) hastily becomes a tightly held secret, and leads First Sea Lord, Admiral Sir Dudley Pound, to send a signal to HMS *Bulldog*,

reading: "Hearty congratulations, the petals of your flower are of rare beauty." But why exactly is no time wasted in whisking these discoveries – codebooks and a strange typewriter used to send encoded messages – from the Atlantic Ocean to a quiet mansion house in the Buckinghamshire countryside?

BOFFINS' LAIR

Bletchley Park was one of the frontlines of World War II. It may not have seen any actual fighting, and the events that took place there didn't make for rousing, victory-fuelled newspaper headlines, but that would have defeated the point. In fact, few people – not even those on the side of the Allies, let alone the Axis Powers – knew of its existence. Bletchley, or Station X, served as the home of the Government Code & Cypher School's codebreakers, who worked day and night to decipher intercepted radio signals coming from the Germans, Italians and Japanese.

The site, near Milton Keynes, had been chosen for this purpose before war had even broken out. It appealed to the head of the Secret

Intelligence Service (or MI6), Admiral Sir Hugh Sinclair, and others scouting locations under the cover of 'Captain Ridley's Shooting Party', for its closeness to London, minus the danger of bombing. It was also close to Oxford and Cambridge – many codebreakers came from the two top universities. Bletchley wanted problem solvers and lateral thinkers, so while graduates with a background in mathematics or linguistics made for obvious recruits, MI6 also approached those gifted in pastimes such as chess and, particularly, cryptic crosswords.

In the early days, they made for an eccentric bunch of boffins, but brilliant and utterly committed. The names include one of the few female codebreakers, Mavis Batey, World War I veteran Dilly Knox, and Cambridge men Gordon Welchman, John Tiltman and Alan Turing. Under the watchful gaze of Alastair Denniston,

Bletchley started to look less like a mansion, and more like an intelligence factory. Wooden huts where the individual teams worked were dotted around the lawn,

OPERATION RUTHLESS

In 1940, Ian Fleming (creator of James Bond) proposed a bold operation to capture codebooks used by the German navy. His plan was never realised

LIVING BY A CODE BLETCHLEY LIFE

Picturesque lawns and walks next to prefabricated wooden huts; eccentric tweed-wearing codebreakers working alongside disciplined, uptight military; lively social clubs and dances mixed with secrecy and silence; facing the constant pressure of time, while spending many days in the same old toil – Bletchley Park became a place of contrasts for the thousands of men and women working there.

On their first day, new recruits would be introduced to the most important thing about Bletchley – don't talk about your work, even with people from other huts. The secrecy must have been hard, but it proved so successful that the Germans had no idea about Bletchley, and it wouldn't be until the 1970s that details emerged at all. No wonder Winston Churchill described it as "The goose that laid the golden egg and never cackled."

The work could be arduous – think of the Wrens watching the noisy bombs for hours at a time, possibly with zero

result – and the days exhausting. The round-the-clock shifts gave each day a conveyor-belt feel. Doris Phillips, from Hut 7, recalled: "I could not believe the number of hours that they expected us to work. We had to do night shifts and only had one day a week off!"

Yet camaraderie grew, and, as they couldn't talk about work, social groups sprang up instead. There were choral societies, drama groups, fencing, bridge and chess clubs, and the Wrens billeted at nearby Woburn Abbey put on well-loved dances. As men and women worked together – women made up around three-quarters of the personnel – romances blossomed too.

HUT 3
Codebreakers and Wrens work together to crack Enigma



DEADLY PREDATORS

THIS IMAGE: A flotilla of German U-boats practise at sea
BELOW: British seamen are rescued from a raft following a U-boat attack



deciphering army and air force radio traffic in Hut 6 and breaking the naval signals in Turing's Hut 8. Working at Bletchley meant round-the-clock shifts, not talking about your work with people from other huts or family and friends, and long periods of frustration and stagnation. Yet most of the workers felt a keen sense of duty, knowing the value of their war effort, even if no one else did.

ESSENTIALLY IMPENETRABLE

By far, most of Bletchley's resources and time went into the task of deciphering the Enigma machine. Resembling a typewriter, it scrambled messages by replacing each letter with another one, which could be sent by Morse code in the safety that it couldn't be read. The receiver could then decrypt it using their own Enigma, configured the same way as the sender's. It may sound straightforward, and the machine proved relatively easy to use for the operators, but the multiple layers of encryption and randomness made Enigma essentially impenetrable.

Firstly, there were the rotors above the keyboard. When the operator pressed a letter, their position changed, which meant hitting the same letter would result in a different encrypted letter each time. Every rotor had 26 connections (the letters of the alphabet) and Enigma typically had three rotors – that's 17,576 possible outcomes (26x26x26). That had to be multiplied again with the four-rotor version

WHAT MADE ENIGMA SO HARD TO BREAK?

The Germans believed the cipher to be unbreakable, but Bletchley had other plans

PORTABILITY

As Enigma had to be used by an army, air force and navy constantly on the move, the machines had to be portable. They ran off a six-volt battery.

ROTORS

An Enigma machine typically had three rotors, chosen from a possible selection of five to make it less predictable. They each rotated through 26 positions after each letter was hit, scrambling the encryption. The Germans modified the U-boat Enigma machine so that it had four rotors, with eight choices.

RING SETTING

This turnover notch was placed on the rotors to determine when each one would start rotating. As it could be on any of 26 positions on each rotor, that makes more than 17,000 options.

LAMPBOARD

After the rotors and plugboard scrambled the original letter, the encrypted substitute lit up. The operator wrote it down, ready to be sent via Morse code.

KEYBOARD

When a letter was pressed, it was substituted with another for the encrypted message. This ended up being a flaw that the codebreakers could exploit, as a letter could never be encrypted as itself.

SEND A MESSAGE

The recipient of a message could only decrypt it by setting their Enigma machine in the same way as the sender's. The rotor order and plugboard configuration, which was changed every day, could be set down in a codebook or sent beforehand, encrypted.

PLUGBOARD

This feature is what made breaking Enigma so daunting. Pairs of letters were connected, swapping them before they were even scrambled. If ten pairs were 'steckered', this allowed Enigma to be configured in more than 150,000,000,000,000,000 ways.

"Enigma could be set up in 159 million million different ways"

IN NUMBERS

THE BATTLE OF THE ATLANTIC

25 During 'Black May', a turning point in the Battle of the Atlantic when U-boats suffered high casualties while convoy sinkings reduced, 25 per cent of Germany's operational U-boats were destroyed.

50 While still a neutral country in 1940, the United States supplied 50 World War I destroyers to assist the Royal Navy.

57 Underestimating the impact that submarine warfare could have on the war, the Germans had only 57 U-boats in 1939.

60 Britain received about 60 per cent of the cargo sent out across the Atlantic, causing shortages and rationing.

68 The Battle of the Atlantic lasted 68 months and five days – that's pretty much the entire duration of the war.

785 Thanks to improved weapons and strong intelligence, 785 U-boats were sunk, resulting in 28,000 deaths.

2,710 To replace the sunken ships, the United States built 2,710 of the low-cost Liberty-class ships.

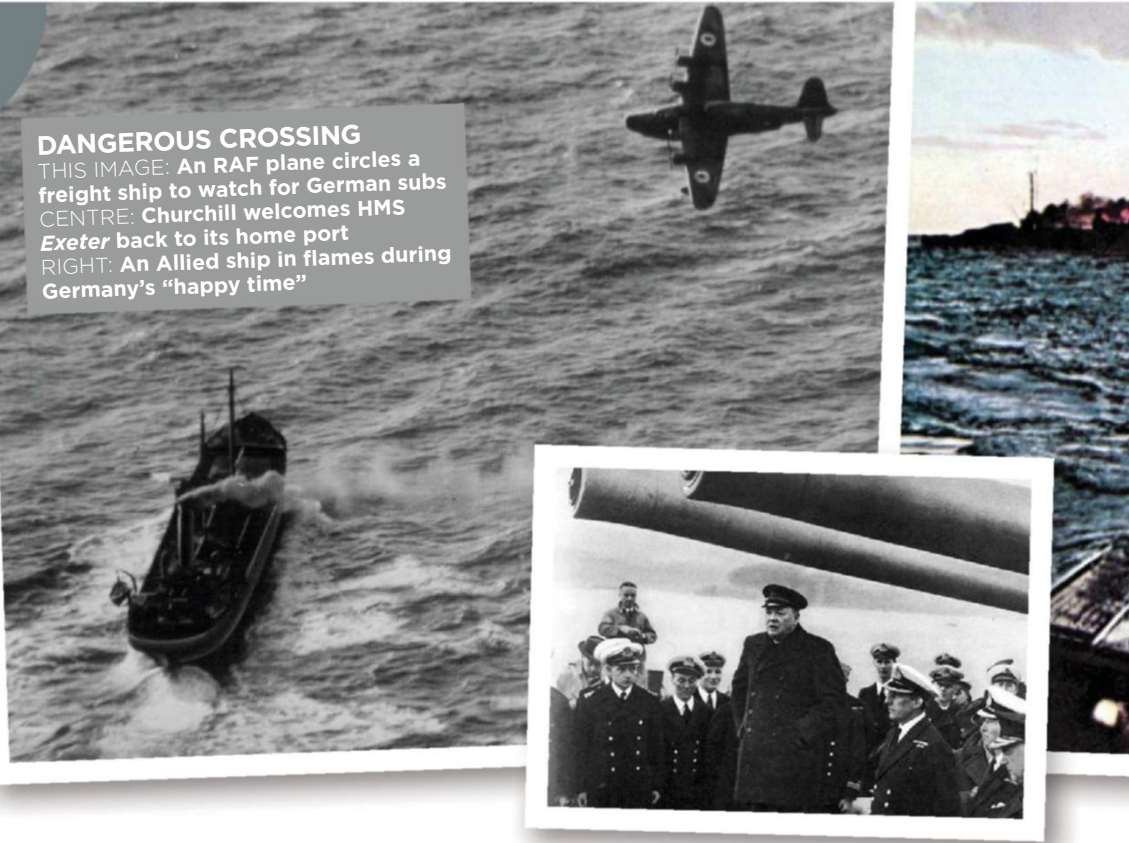
75,000 An estimated 80,000 Allied deaths occurred in the Atlantic, including some 30,000 merchant seamen.

637,000 In the single most destructive month, June 1942, U-boats sank 637,000 tons of British shipping. That's around 359 tons per sub.

889.8mmm When the German navy introduced the four-rotor Enigma, it could be configured in 889.8 million million million different ways.

DANGEROUS CROSSING

THIS IMAGE: An RAF plane circles a freight ship to watch for German subs
CENTRE: Churchill welcomes HMS Exeter back to its home port
RIGHT: An Allied ship in flames during Germany's "happy time"



"Hope of victory looked bleak while the armed forces couldn't be equipped with weapons"

introduced later in the war. Still, that's nothing compared to the plugboard, or Steckerbrett, at the front. This connected pairs of letters and switched them before they got to the rotors, and the Germans tended to use ten 'steckered' pairs for each message. That means Enigma could be set up in 159 million million million different ways. Add the fact that the Nazis changed the settings every day at midnight, and it's easy to see why Enigma made for years of headaches and sleepless nights for Bletchley's best.

GERMAN HUBRIS

Enigma had been the invention of German engineer Arthur Scherbius, who marketed his cipher machine in the twenties to companies wanting to transfer information without competitors finding out. The first success in cracking it came from the Polish Cipher Bureau in the thirties, thanks to gifted mathematician Marian Rejewski, but in 1939, the Poles – facing invasion – passed on their secrets to the British. This gave Bletchley a

starting point, but as the war encouraged the Nazis to make additions, and not forgetting regular setting changes, the codebreaking had to start all over again.

Such was the German hubris when it came to Enigma's security that the Wehrmacht used it for the majority of

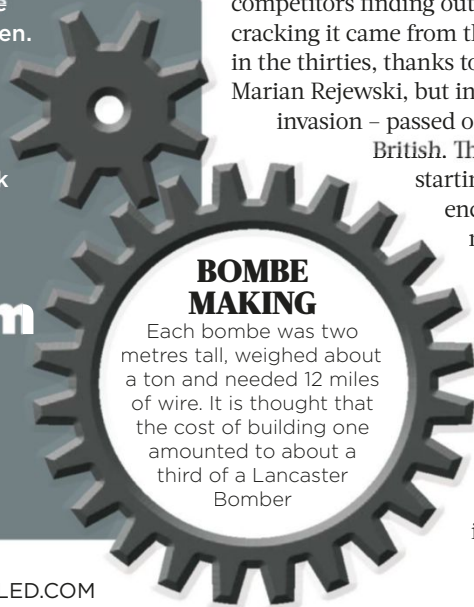
communications – for army, air force and navy – and they didn't fear radio traffic reaching Allied ears as they couldn't imagine anyone breaking the code. But Bletchley needed to break it or the Battle of the Atlantic, and with it the war, would be lost.

As an island squeezed by a naval blockade, Britain relied desperately on supplies delivered from America, Canada and other countries. Without control of the shipping lanes that allowed merchant ships to cross the Atlantic, the country faced food and fuel shortages, and hope of victory in Europe looked bleak while the armed forces couldn't be equipped with weapons, vehicles and ammunition. Prime Minister Winston Churchill would later write, "The Battle of the Atlantic was the dominating factor all through the war. Never for one moment could we forget that everything happening elsewhere, on land, at sea or in the air depended ultimately on its outcome."

Yet the U-boats swung the balance in their favour, as they proved devastatingly effective against supply convoys. Not only did the ships have to move slowly but they could barely defend themselves, relying on military escorts that weren't always available. This made them soft targets for the U-boats. Using the 'wolfpack' tactic – advocated by commander of the U-boats, Admiral Karl Dönitz – one sub could identify the prey and send a signal to the others, who swiftly converged on the location and launched an all-out attack, sinking as much tonnage as they could before slipping back beneath the surface. Unable to decipher the U-boat signals, which would have allowed

BOMBE MAKING

Each bombe was two metres tall, weighed about a ton and needed 12 miles of wire. It is thought that the cost of building one amounted to about a third of a Lancaster Bomber





them to locate and stay clear of the wolfpacks, the Allies lost hundreds of ships, much-needed goods and thousands of men. The Germans dubbed this the “happy time”.

While carrying valuable resources like steel, lumber and iron ore from Nova Scotia to Liverpool in October 1940, one convoy of 35 ships and half a dozen escorts, SC 7, became the worst victim of a wolfpack. They faced constant harassment for two days, which claimed 20 vessels – 16 sunk in just six hours – and 141 men. As if that wasn’t a good enough haul for the U-boats, they had only called off the attack so that they could turn their attentions to another convoy in the vicinity. Later that night, the five-strong wolfpack overwhelmed HX-79, sinking a further 12 ships. Every day that the Bletchley boffins failed to find the key – nicknamed ‘Dolphin’ – represented squandered supplies, dead sailors and another step towards defeat in the war.

BOMBE BREAKTHROUGH

That is not to claim Enigma to be flawless, or that Bletchley had made no progress in breaking the unbreakable. The initial step would be to find a ‘crib’ – a word or phrase that was guessed to be in the decrypted message, which, in turn, assisted in unlocking the settings used by the Enigma operator. This job could be made marginally easier by the Germans themselves, as they filled communications with common phrases, such as “nothing to report” or the word “weather”. Such human error compounded one of Enigma’s few technical loopholes – the fact that, although the machine could substitute a letter with any other, it could never be enciphered as itself. So an ‘A’ would never appear as an ‘A’ in the encrypted text, which, again, helped to work out a crib and where it may sit in a message.

Bletchley had plenty of brainpower buried at work in the huts, but it needed more machine power to break Enigma. Turing

TRAGEDY OF A BLETCHLEY HERO ALAN TURING

The word ‘genius’ is thrown around too readily these days, but few embody true genius more than Alan Turing.

On 4 September 1939, the day after Britain declared war on Germany, the 27-year-old Cambridge mathematician arrived at Bletchley Park, where he spent the duration attempting to decipher the seemingly unbreakable Enigma code used by Nazi Germany’s navy. It was essential work, but strictly clandestine, meaning Turing faced derision from his landlady at the Crown Inn for not doing his bit. From Hut 8, he developed the bombe, a machine that tested Enigma’s 17,576 possible rotor settings in minutes – a job that would be impractically long and laborious to do by hand. The bombe helped Bletchley to decode masses of intelligence, sometimes as many as 84,000 messages per month.

Turing had a reputation as an eccentric, cycling around wearing a gas mask to protect himself from pollen, and chaining his mug to his office radiator to stop it from being stolen. Yet he was a kind-hearted, humble man, who – far from working alone – led hundreds of people in Hut 8. All the while, he struggled with his homosexuality, which was illegal at the time. He even proposed to Bletchley colleague Joan Clarke, but it didn’t last.

After the war, Turing turned his attention to the Automatic Computing Engine (ACE), the first complete design for a stored-program, all-purpose digital computer – although he didn’t see it built. The concept for the Universal Turing Machine, however, formed the

basis of modern computing, and we now refer to the ‘Turing test’ more than ever with the burgeoning advances in artificial intelligence.

Yet Turing’s life ended in tragedy, and at the hands of the government he had served so diligently. In 1952, he was arrested for ‘gross indecency’ – being gay – and only avoided jail by agreeing to be ‘treated’ with injections of female hormones. This chemical castration caused Turing to slump into depression. When he was found dead in 1954, aged 41, the verdict was suicide. It wasn’t until 2013 that Turing received a royal pardon for the shameful arrest and punishment that he endured.

It would also take time for his war work to be recognised. Today, Turing has taken his place as one of the 20th century’s greatest minds, a man who broke Enigma and helped to win the war.



MAN BEHIND THE MACHINE
ABOVE RIGHT: Each of the rotating drums on the bombe simulates the action of an Enigma rotor RIGHT: A portrait of Turing

made the breakthrough by developing an electromechanical device called the ‘bombe’, which used a crib to cycle through all the possible rotor settings much quicker than a human. When it found one, the bombe stopped and its findings had to be checked in several laborious stages. The first bombe, Victory, arrived in March 1940, but soon the loud, clunking noises of dozens of bombes could be heard at Bletchley, and it fell to the Wrens (Women’s Royal Naval Service) to supervise their operation. Former Wren Morag MacLennan

recalled: “It was very smelly with machine oil and really quite noisy. The machine kept clanking around and unless you were very lucky, your eight-hour watch would not necessarily produce a good stop that broke a code.”

Turing’s design for the bombe had been inspired by the pioneering Poles, received vital refinements from Welchman, and Harold ‘Doc’ Keen should be credited as the man who actually built the state-of-the-art contraption. But despite that, and all of the tireless work at

BREAKING THE ENIGMA CODE

Bletchley, the genius of the bombe is the reason Turing is lauded as the man who broke Enigma.

Still, Bletchley needed one more thing first. Luck. That arrived in the form of Operation Primrose – plus the capture of two weather ships, *München* and *Lauenburg*, around the same time. These provided up-to-date codebooks, giving the bombe much higher chances of finding a match. And so it proved. Bletchley could finally read the Nazis' naval Enigma traffic, and when they discovered the way to do it once, they knew how to keep doing it. The 'Ultra' intelligence retrieved from Enigma helped to track the wolfpacks in the Atlantic, meaning convoys had the power to avoid U-boats, and as a result the number of ships sunk dropped dramatically.

UNKNOWN HEROES

If the codebreakers knew one thing about Enigma, though, it would be that breaking the code was a continual, evolving process, where the work never stopped and any setback could hurl them back to the beginning again. On 1 February 1942, the U-boats adopted a new

four-rotor Enigma machine, plunging Bletchley into an information blackout for ten months as they agonised over the harder cipher. They changed the name of the naval encryptions from 'Dolphin' to the more appropriate 'Shark'. Like before, the breakthrough finally came with the capture of a sub. The Weather Short Code Book, found on U-559 in October 1942, revealed that the larger Enigma could be used as a three-rotor – leaving the fourth neutral – which presented the way back in by the end of the year.

Bletchley never slept for the rest of the war. At its peak in 1945, some 10,000 people worked there, the majority of them women. They toiled to carry on breaking the millions of encrypted messages – not only the variations of Enigma but Lorenz too – flooding in from the 'Y Service', a chain of intercept

"These silent heroes shortened World War II by two or three years"

CIPHER AND COLOSSUS LORENZ

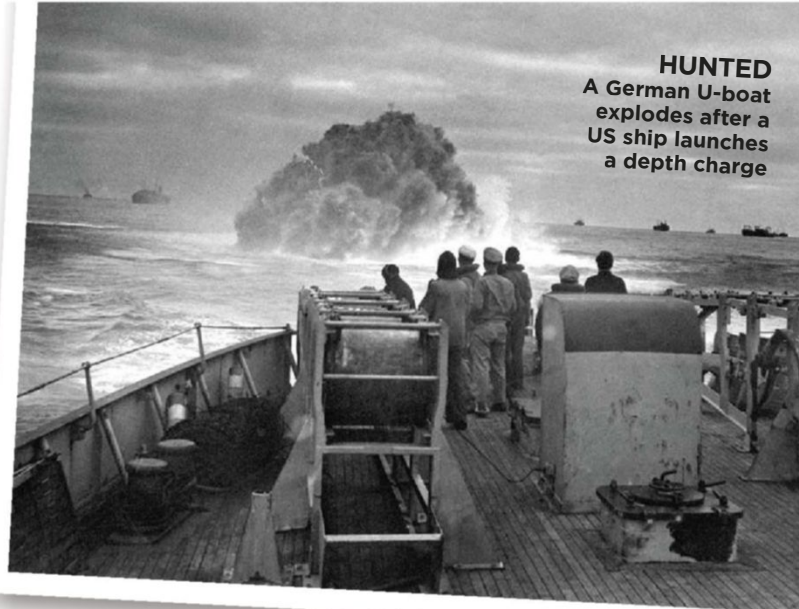
While the breaking of Enigma is celebrated as Bletchley's greatest achievement, the codebreakers did crack another cipher, and its mechanics were even more complex as Hitler himself used it. Bigger and heavier, 'Lorenz' scrambled messages using 12 rotors, or wheels, compared to Enigma's three or four.

But when an operator made the egregious error of sending the same pieces of vital information twice, he gave John Tiltman, a top Bletchley codebreaker, and chemistry and maths graduate Bill Tutte the information that they needed.

Tutte deduced how Lorenz (or 'Tunny' as it became known at Bletchley) worked without even seeing one. Their extraordinary analysis meant that the codebreakers could now read the führer's own commands.

Like Enigma, the Germans adapted their ciphers in the hope of making them more protected, which, in turn, led Bletchley to look to a machine to do the work they couldn't. A young Post Office engineer named Tommy Flowers designed Colossus – the world's first practical electronic digital and information processing computer. By 1944, Colossus was operational, reading 5,000 characters per second and whizzing through paper tape at 30 miles per hour.

COLOSSAL EFFORT
Wrens operate Tommy Flowers' Colossus computer



HUNTED
A German U-boat explodes after a US ship launches a depth charge

stations in Britain and in Europe, as well as keeping their secret. False spies and agents had to be concocted, the most famous being 'Boniface', so as not to arouse suspicion as to where the Allies got their information from. Bletchley also played a role in disseminating false information, and it managed to convince Hitler that D-Day was a diversion from the real invasion in Calais, which then caused him to hold back his forces from Normandy.

For all their successes, from North Africa to the Soviet Union, and from Hitler's personal communiques to Japan, Bletchley is still

best remembered for its role in winning the Battle of the Atlantic. And for good reason, as who knows how the war might have gone if the convoys had been cut off from Britain. As Churchill admitted in later life, "The only thing that every really frightened me during the war was the U-boat peril."

From the idyllic country setting of Bletchley Park, these silent, unknown heroes shortened World War II, perhaps by as much as two or three years. Yet it remains a cruel irony that the people who made gathering intelligence their lives remained in the dark for decades – some went to the grave keeping Bletchley's secrets – and many never received the recognition that they so truly deserved. 📍

COG IN THE MACHINE

Tommy Flowers, who designed Colossus, was told by the management of Bletchley Park to find his own funds for the machine, and they didn't believe that it would work

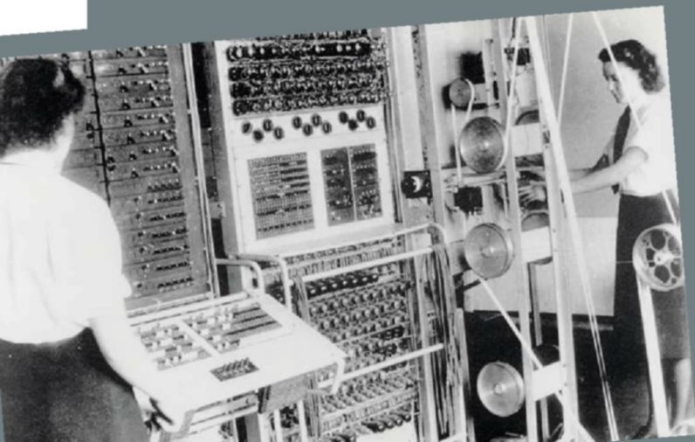
GET HOOKED

VISIT

The home of the World War II codebreakers, Bletchley Park, Milton Keynes, has witnessed huge restoration work, opening up the huts and mansion with fascinating exhibits. There's also the chance to get up close to one of the Enigma machines. www.bletchleypark.org.uk

READ

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THE SEVEN WONDERS OF THE ANCIENT WORLD

As the pinnacle of antiquity's ability in engineering, architecture and artistic beauty, they still cast their shadow over human endeavour today. **Jonny Wilkes** explores

ROCK ON

Though the pyramid has been the victim of weathering, it is estimated that **only 0.01% of its total volume** is lost annually, and it will remain standing for another **100,000 years**.

They consist of a pyramid, a mausoleum, a temple, two statues, a lighthouse and a near-mythical garden. Individually, the Seven Wonders of the Ancient World can be regarded as astounding architectural achievements or marvels of human imagination and engineering – but together, they form an ancient travel guide, there to challenge the limitations of the time and, literally, reach for the skies.

Despite only being a short-lived collection – the last to be completed, the Colossus of Rhodes, stood for less than 60 years – and one of them, the Hanging Gardens of Babylon, possibly not existing at all, the Wonders continue to capture imaginations and drive archaeologists and treasure hunters. They laid the foundations for what humans could achieve. Yet for all

their fame, there are many questions surrounding these classical creations. Who decided what constituted a 'Wonder' in the first place?

As Greek travellers explored the conquests of other civilisations, such as the Egyptians, Persians and Babylonians – which is why the Seven Wonders are all around the Mediterranean Rim – they compiled early guidebooks of the most remarkable things to see, meant as recommendations for future tourists. They called the landmarks that bewildered and inspired them *theamata* (or 'sights'), but this soon evolved to the grander name of *thaumata* – 'wonders'.

Is there only one list? The Seven Wonders we know today are an amalgamation of all the different lists from antiquity. The best-known versions come from the second-century-BC poet Antipater of Sidon, and mathematician

Philo of Byzantium, but other names include Callimachus of Cyrene and the great historian Herodotus. What made their list relied on where they travelled and, of course, their personal opinion, so while we recognise the Lighthouse of Alexandria as a Wonder today, some left it out, favouring the Ishtar Gate of Babylon instead.

But why are there only seven? Despite a plethora of structures and statues in the ancient world worthy of inclusion, there have only ever been seven Wonders. The Greeks chose this number as they believed it held spiritual significance, and represented perfection. This may be as it was the number of the five known planets at the time, plus the Sun and Moon.

And another question about the Seven Wonders, considering all but one are long lost or destroyed, may be – what exactly are they?

GREAT PYRAMID OF GIZA

Get a room full of people to name the Seven Wonders and most would name the Great Pyramid of Giza first. A recent survey went further and suggested that it is, in fact, the only Wonder many could name. The reason is simple enough – while the other six have been lost for centuries, the Great Pyramid of Giza still stands proudly in northern Egypt.

While Wonders such as the Lighthouse of Alexandria (a narrow tower) and the Colossus of Rhodes (anchored just by the feet of the statue), were never that stable, the 13-acre base of the pyramid is wide and solid, allowing the oldest Wonder to be the only Wonder.

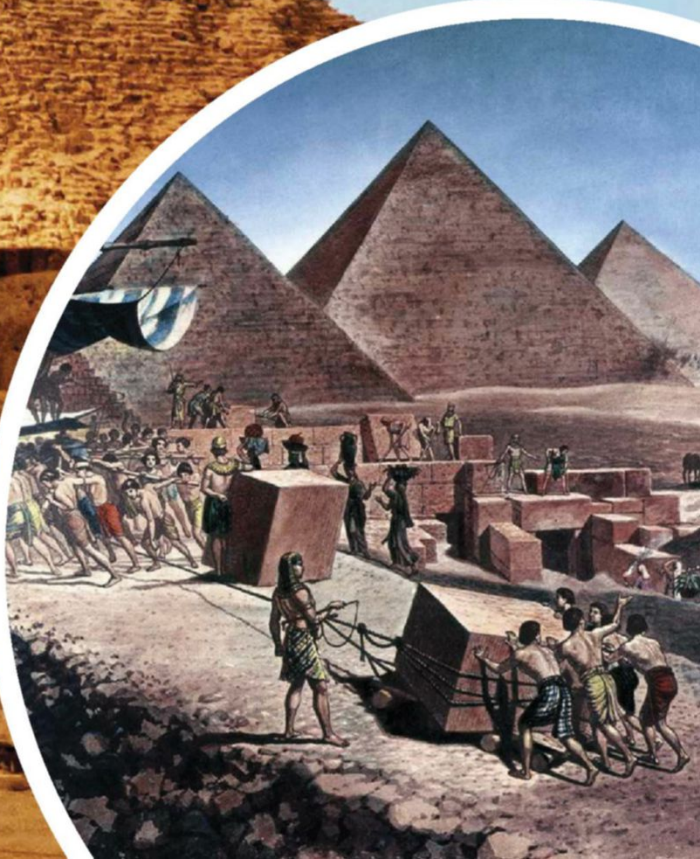
Built in c2500 BC as the tomb of the fourth-dynasty pharaoh Khufu, it is the largest of the three Giza pyramids. Its original height of 146.5 metres (481 feet) made the pyramid the tallest human-made structure in the world until Lincoln Cathedral eclipsed it in the 14th century. The years have seen the outer layer of limestone erode – cutting almost eight metres (27 feet) off the height – but the pyramid remains one of the most extraordinary sights on the planet. Recent estimates suggest that it took around 14 years to transport and place the 2.3 million stone blocks.

Just how the pyramids were built – or how, 4,000 years ago, Egyptians aligned their structures with the points of the compass – remains the subject of debate. How can anyone question the Great Pyramid's position as one of the Seven Wonders, if some of the theories behind its construction even point towards alien intervention?

**“THE SEVEN
WONDERS LAID THE
FOUNDATIONS
FOR WHAT HUMANS
COULD ACHIEVE”**

PYRAMID SCHEME

Despite claims of slave labour, it is thought that the Great Pyramid was built by skilled workers at the times when the Nile flooded their farms



MAUSOLEUM OF HALICARNASSUS

DEAD END

Upon Artemisia's death, the stairs were filled with rubble, sealing the access

Over the course of his life, the powerful Mausolus built a magnificent new capital for himself and his wife Artemisia at Halicarnassus (on the western coast of modern-day Turkey), sparing no expense to fill it with beautiful marble statues and temples. There was no question that he, being the *satrap* (governor) of the Persian Empire and ruler of Caria, would enjoy similar luxury after he died in 353 BC.

Artemisia (also Mausolus's sister) was supposedly so grief-stricken by her husband's death that she mixed his ashes with water and drank them, before overseeing the building of his extravagant tomb. Made of white marble, the monumental structure sat on a hill overlooking the capital he had built.

It had been designed by Greek architects Pythius and Satyros and boasted three levels - combining Lycian, Greek and Egyptian architectural styles. The lowest was around 20 metres (66 feet) high, forming a base of steps that led to the second level, ringed by 36 columns. The roof was in the shape of a pyramid, with a sculpture of a four-horse chariot on top bringing the height of the tomb to around 41 metres (135 feet). Four of Greece's most renowned artists created other sculptures and friezes to surround the tomb, each decorating a single side.

The tomb may have been destroyed by earthquakes in medieval times, but a part of it lives on to this day - such was the splendour of Mausolus's final resting place that his name led to the word 'mausoleum'.

STATUE OF ZEUS

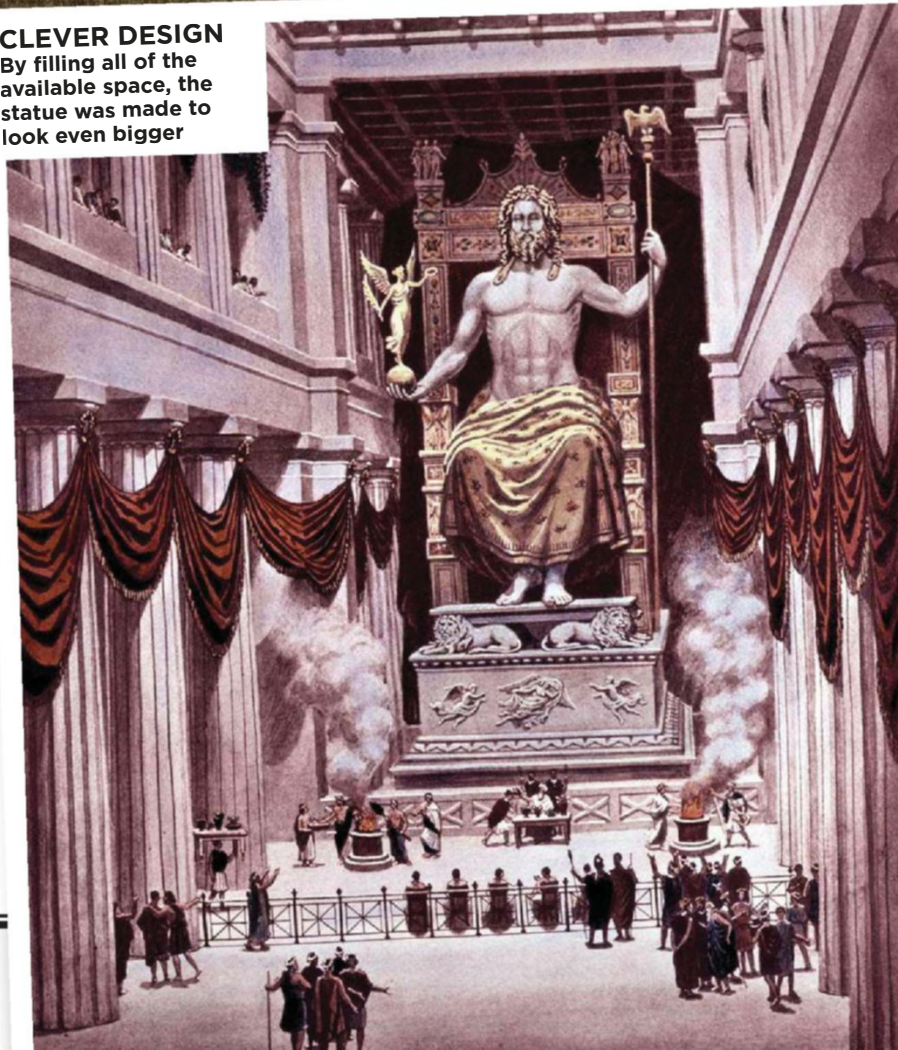
CLEVER DESIGN

By filling all of the available space, the statue was made to look even bigger

Olympia - a sanctuary in Ancient Greece, the site of the first Olympic Games and the home to a Wonder. And what better way to respect the chief god of the Ancient Greeks than to build a giant statue of him? That's what sculptor Phidias did when he erected his masterpiece at the Temple of Zeus at Olympia, in c435 BC.

Zeus sat resplendent on a throne made of cedar wood and decorated with gold, ivory, ebony and precious stones. The god of thunder held a statue of Nike, the goddess of victory, in his outstretched right hand and a sceptre with an eagle perched on top in his left. He was further adorned with gold and ivory, meaning that the temple priests had to oil the statue regularly to protect it from the hot and humid conditions of western Greece. Such was the size of the statue, almost 12 metres (39 feet) high, that it barely fitted inside the temple, with one observing, "It seems that if Zeus were to stand up, he would unroof the temple."

For eight centuries, people would voyage to Olympia just to see the statue. It survived the madness of Roman emperor Caligula, who wanted it brought to Rome so that its head could be replaced with his own likeness, but Zeus was eventually lost. It may have happened with the destruction of the temple in AD 426, or been consumed in a fire after being transported to Constantinople.



“THERE IS STILL NO CONCLUSIVE EVIDENCE THAT THE HANGING GARDENS OF BABYLON EXISTED AT ALL”

INSPIRED BY NATURE
The gardens were made to resemble the mountainous green landscape of Media

ECO-WARRIOR
Nebuchadnezzar II gazes out across Babylon from his Hanging Gardens

LOST IN TRANSLATION

The name 'Hanging Gardens' may be a **mistranslation** of the Greek word 'kremastos', which not only means 'hanging' but also **'overhanging'**, as is the case with the terraces.

HANGING GARDENS OF BABYLON

Detailed descriptions may exist in many ancient texts, both Greek and Roman, but no other Wonder is more mysterious than the Hanging Gardens of Babylon.

All accounts, after all, are second-hand, and there is still no conclusive evidence that they existed at all. If they were real, they demonstrated a level of engineering skill way ahead of its time, as keeping a garden lush and alive in the deserts of what is now Iraq would have been no small feat.

One theory is that the Babylonian King Nebuchadnezzar II had the

Hanging Gardens created, in c600 BC, to help his homesick wife, who missed the greenery of her Median homeland (now Iran).

They may have been an ascending series of rooftop gardens, with some of the terraces supposedly reaching a height of around 23 metres (75 feet). This gave the impression of a mountain of flowers, plants and herbs growing out of the heart of Babylon. The exotic vegetation would have been irrigated by a sophisticated system of pumps and pipes, bringing water from the Euphrates river.

Philo of Byzantium describes the process of watering the gardens:

“Aqueducts contain water running from higher places, partly they allow the flow to run straight downhill and partly they force it up, running backwards, by means of a screw,” which includes an early ‘Archimedes Screw’. “Exuberant and fit for a king is the ingenuity, and most of all, forced, because the cultivator’s hard work is hanging over the heads of the spectators.”

Recently, it has been postulated that the Hanging Gardens did exist, but not in Babylon. Dr Stephanie Dalley of the University of Oxford claims that the gardens and irrigation were the creation of the Assyrian king Sennacherib for his palace at Ninevah, 300 miles to the north and on the Tigris river.



LIGHTHOUSE OF ALEXANDRIA

Boats sailing into the harbour of Alexandria found it a tricky prospect, thanks to shallow waters and rocks. A solution was needed for the thriving Mediterranean port (on the coast of Egypt) – founded by Alexander the Great in 331 BC, hence the name – and it came in the shape of a lighthouse on the nearby island of Pharos.

Greek architect Sostratus of Cnidus was handed the job, which took well over a decade, with construction finished in the reign of Ptolemy II, c280-70 BC. It is thought that the lighthouse reached a height a little under 140 metres (459 feet), making it the second-tallest human-made structure of antiquity behind the Great Pyramid of Giza. The tower was divided into a square base, an octagonal midsection and a cylindrical upper section, all connected by a spiral ramp so that a fire could be lit at the top. This was allegedly visible 30 miles away. Greek poet Posidippus described the sight: "This tower, in a straight and upright line, appears to cleave the sky from countless stadiums away... throughout the night, a sailor on the waves will see a great fire blazing from its summit." This design became the blueprint for all lighthouses since.

Like some of the other Seven Wonders, the lighthouse fell victim to earthquakes. It managed to survive several major shocks, but not without heavy damage that led to it being abandoned. The ruins collapsed for good in the 15th century. That wasn't the last of the lighthouse, however, as French archaeologists discovered massive stones in the waters around Pharos in 1994, which they claim formed part of the ancient structure. Then in 2015, Egyptian authorities announced their intention to rebuild the Wonder.

SMOKE & MIRRORS

During the day, a mirror at the apex reflected sunlight while the fire was not lit



TEMPLE OF ARTEMIS

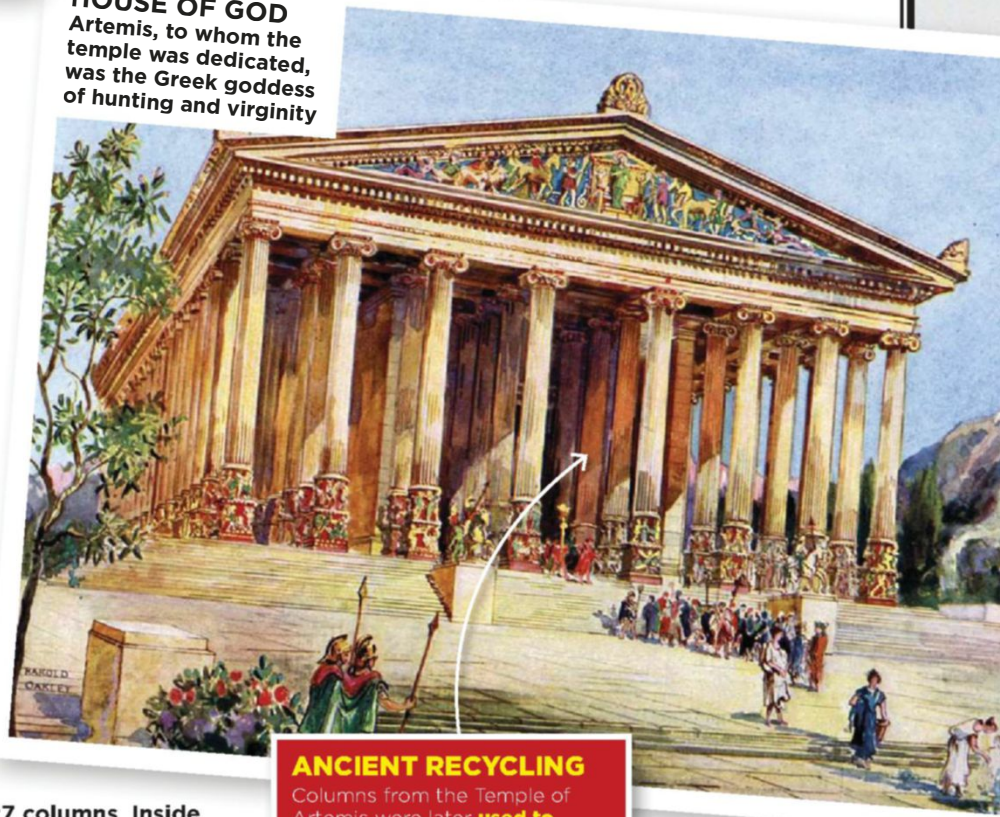
You may have an opinion on what was the greatest Wonder, but few were more certain than Antipater of Sidon. His tribute to the Temple of Artemis read: "I have set eyes on the wall of lofty Babylon on which is a road for chariots, and the statue of Zeus by the Alpheus, and the Hanging Gardens, and the colossus of the Sun, and the huge labour of the high pyramids, and the vast tomb of Mausolus but when I saw the house of Artemis that mounted to the clouds, those other marvels lost their brilliancy, and I said, 'Lo, apart from Olympus, the Sun never looked on aught so grand'."

That said, the temple had a difficult, violent existence, so much so that there were actually several temples, built one after the other in Ephesus, modern-day Turkey. The Wonder was repeatedly destroyed by a seventh-century-BC flood, an arsonist named Herostratus in 356 BC, who hoped to achieve fame by any means, and a raid by the East Germanic Goths in the third century. Its final destruction came in AD 401. Very little remains of the temple, save for fragments held by the British Museum.

At its most impressive – the version that inspired Antipater's account – the white marble temple ran for over 110x55m (361x180ft), with its entire length ornamented by carvings, statues and 127 columns. Inside stood a statue of the goddess Artemis, a site of homage for the many visitors to Ephesus, who left offerings at her feet.

HOUSE OF GOD

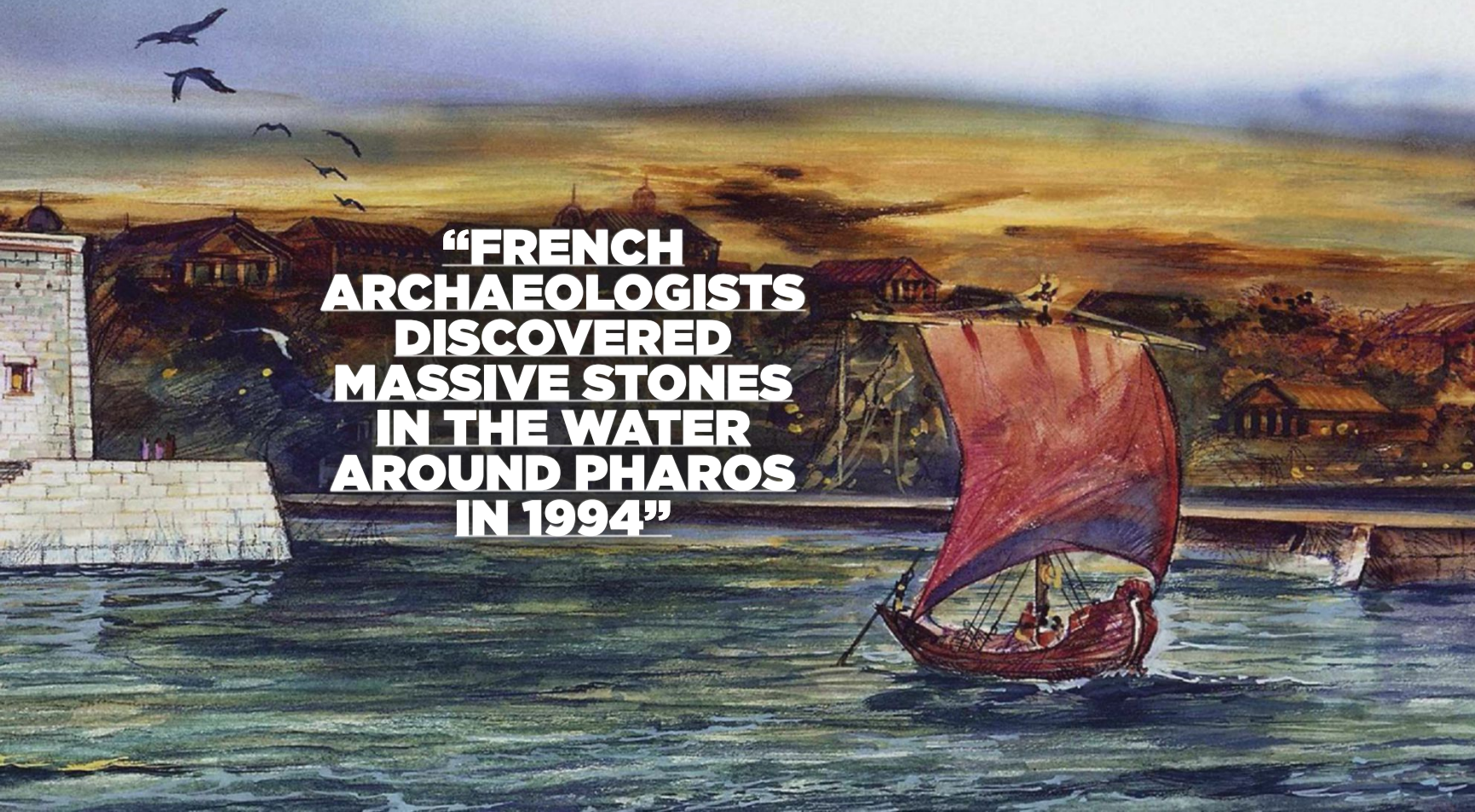
Artemis, to whom the temple was dedicated, was the Greek goddess of hunting and virginity



ANCIENT RECYCLING

Columns from the Temple of Artemis were later **used to build the Hagia Sophia**, and several of the temple's statues and decorative elements were reused across Constantinople.

**"FRENCH
ARCHAEOLOGISTS
DISCOVERED
MASSIVE STONES
IN THE WATER
AROUND PHAROS
IN 1994"**





SEVEN WONDERS OF THE ANCIENT WORLD

WEAK AT THE KNEES

The sun god snapped at the knees following a deadly earthquake that destroyed much of the city

POSTURE-LATION

Though the Colossus is often depicted **holding a torch above his head**, there is no evidence for this. Instead, it is suggested that he had **one hand shielding his eyes**, as he is shown in reliefs.

COLOSSUS OF RHODES

Erected c282 BC, the Colossus of Rhodes was the last Wonder built, and among the first destroyed. It stood for less than 60 years, but that didn't signal the end of its status as a Wonder.

The mighty statue of the sun god Helios had been erected over 12 years by the sculptor Chares of Lindos to celebrate a military triumph in a year-long siege. Legend claims that the people of Rhodes sold the tools left by their vanquished foe to help pay for the Colossus, melted down abandoned weapons for its bronze and iron edifice, and used a siege tower as scaffolding.

Overlooking the harbour, Helios stood at 70 cubits – some 32 metres (105 feet) – high, possibly holding a torch or a spear. Some depictions show him straddling the harbour entrance, allowing ships to sail through his legs, but this would have been impossible with the casting techniques of the time.

Regardless, the Colossus still wasn't strong enough to withstand an earthquake in 226 BC, and the statue came crashing to the ground in pieces. Rhodians declined Ptolemy's offer to have it rebuilt, having been told by an oracle that they had offended Helios.

So the giant, broken sections lay on the ground, where they stayed for over 800 years still attracting visitors. The historian Pliny the Elder wrote: "Even as it lies, it excites our wonder and admiration. Few people can clasp the thumb in their arms, and its fingers are larger than most statues." When enemy forces finally sold the Colossus for scrap in the seventh century, it took 900 camel loads to shift all the pieces.

ALAMY X2, GETTY XI



OTHER WONDERS OF THE WORLD

There are plenty of incredible feats of art and engineering still standing

CHRIST REDEEMER

The iconic 30-metre statue of Jesus Christ is ideally placed to overlook Rio de Janeiro, Brazil.

Contrary to belief, the Wall can not be seen from space

GREAT WALL OF CHINA

Over millennia, some 13,000 miles of fortifications were built to keep China safe from invaders.

MACHU PICCHU

High up in the mountains of Peru sits the ruins of an Inca city, only discovered in 1911.

PETRA

A beautiful ancient city in Jordan, hidden in the gorges and carved out of the red rock of the cliff faces.

COLOSSEUM

Rome's immense stadium allowed tens of thousands to attend the gladiatorial games.

CHICHEN ITZA

The Mayan city in Mexico is dominated by the 30-metre-high step pyramid of El Castillo.

TAJ MAHAL

Stunning architecture and intricate art make this mausoleum one of the most beautiful buildings in the world.

EIFFEL TOWER

The Parisian landmark attracts millions of visitors a year, many of whom ascend the 1,710 stairs to the top.

SAGRADA FAMILIA

It may not be finished, but Antoni Gaudi's Gothic masterpiece is one of the world's most unique cathedrals.

SPRING TEMPLE BUDDHA

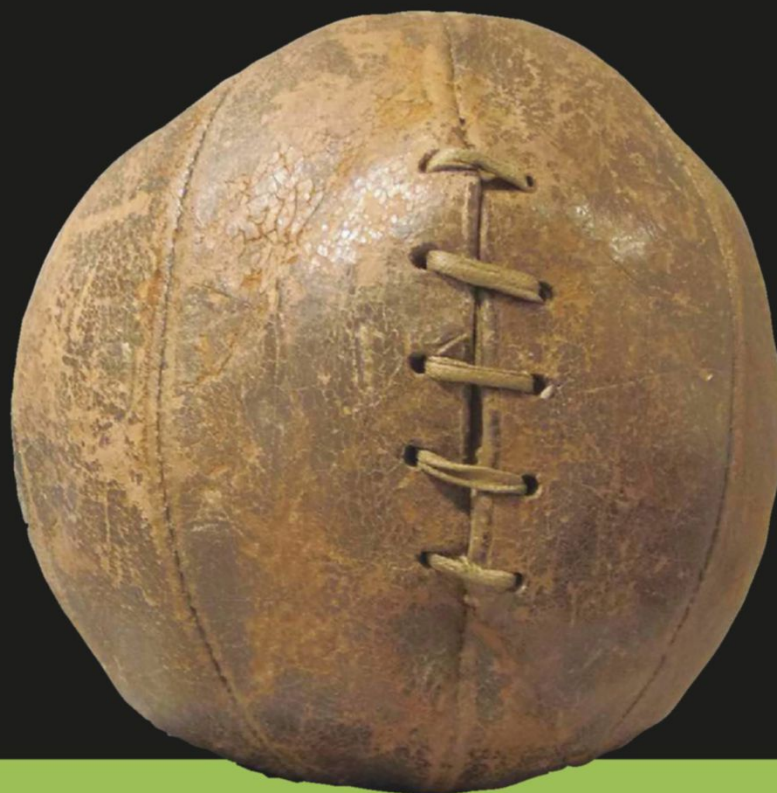
At 153 metres, the world's tallest statue is the same height as a 35-storey building.

HAGIA SOPHIA

Istanbul's sixth-century cathedral is the most important, and distinctive, structure of the Byzantine period.

It is hoped that work on the Sagrada Familia will end in 2026





THIS FOOTBALL WENT TO WAR

During the First World War, the nation's football teams produced their fair share of heroes - brave men such as Manchester City's Patrick McGuire, Reading's Freddie Wheatcroft and Notts County's Arthur Clamp.

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CHARLIE CHAPLIN
Chaplin's first appearance as his famous character 'the Tramp', in 1914. Here, in a still from the film *Kid Auto Races at Venice*, Chaplin looks into the camera as two cameramen look on.

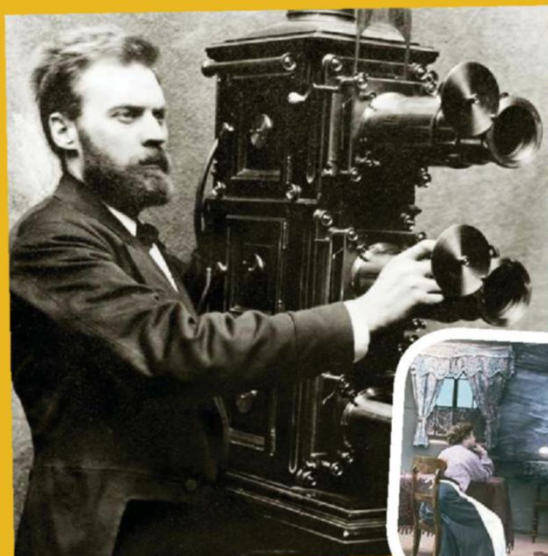


SILENCE IS GOLDEN

The early decades of cinema, known as the silent era, set the stage for a golden age of movie magic and created iconic stars who are still revered today

BIRTH OF CINEMA

From vaudevillian picture entertainment to the cinematograph, technology of the late 19th century led to the silver screen



C GOODWIN NORTON

Norton operating a three-lens triurnal lantern in 1888. A well-known 'lantern entertainer' over the next decade, these forms of moving picture paved the way for the cinema of the following century.

LOUIS AIMÉ LE PRINCE

Frames from a ciné film of Leeds Bridge in 1888, by French inventor Louis Aimé Le Prince. This is arguably the first moving picture film ever taken, and was several years before competing inventors the Lumière brothers and Thomas Edison. Le Prince mysteriously disappeared in 1890 and was never found.



THE LUMIÈRE BROTHERS

Auguste and Louis Lumière (seen below in 1943), and below right, their first projected film – *Workers Leaving the Lumière Factory in Lyon* – in 1895. It is often referred to as the first 'real' motion picture ever made.



POPULAR WITH THE MASSES

A packed Palladium cinema in Mile End, London, c1913, showing the popularity of the new form of entertainment as it burst into the mainstream.

BEHIND THE SCENES

Actor Edward Hugh Sothorn being directed by Frederick Thomson for the production of lost film *The Chattel* in 1916.



**THE OLDEST
SURVIVING MOVIE
LASTED FOR TWO
SECONDS**



BUSTER KEATON BROKE HIS NECK ON THE SET OF SHERLOCK JR, BUT DIDN'T FIND OUT UNTIL YEARS LATER

BUSTER KEATON

The famous falling house stunt in 1928's *Steamboat Bill Jr*, which was, of course, performed for real, despite protestations from others on set due to the high level of risk involved.

HAROLD LLOYD

The legendary stuntman and actor in his iconic clock scene from his most famous film, *Safety Last*, from 1923. Lloyd owned the films he produced and became extremely wealthy during his career.

THE BIG THREE

Arguably the three most famous, or infamous in one case, films of the era



BIRTH OF A NATION

A huge financial success in 1915, the film was highly controversial due to the portrayal of the Ku Klux Klan as a heroic force, and black men as unintelligent and sexually aggressive. Even so, it was the first film to be screened at the White House.

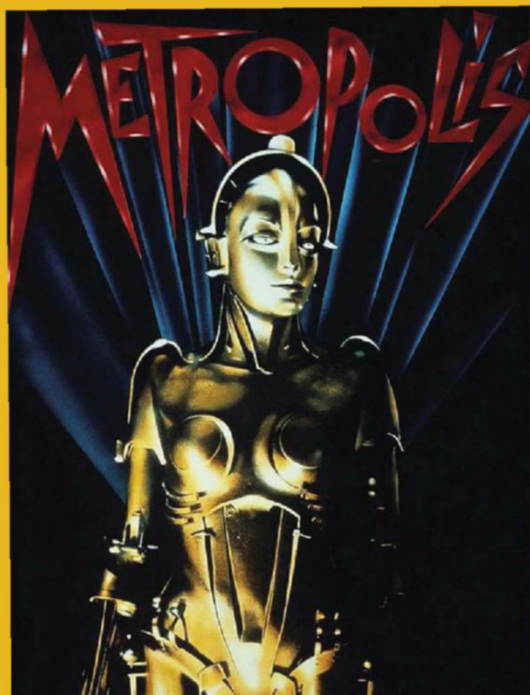


BEN HUR: A TALE OF CHRIST

Behind the scenes of the most expensive film of the silent era, coming in at \$3.9million in 1925. The famous chariot race was deemed to be too tame, until the head of MGM offered \$100 to the stunt rider who won the race, leading to a crash.

METROPOLIS

Fritz Lang's 1927 dystopian classic was a huge influence on later sci-fi, including Ridley Scott's *Blade Runner* and George Lucas's *Star Wars* - the 'Maschinenmensch' (German for machine-human), below, being an obvious progenitor of C3PO.



GRETA GARBO

Garbo is seen here with John Gilbert in *A Woman of Affairs*, from 1928. Their on-screen romance was mirrored in real life, but while his success dwindled, she went on to become the highest-paid actress of the age.

RUDOLF VALENTINO

The heartthrob of the twenties, the 'Latin lover' has something to get off his chest in *Son of the Sheik*, 1926. Sadly, he died later this year (at just 31) from stomach ulcers and complications following surgery.



MARY PICKFORD

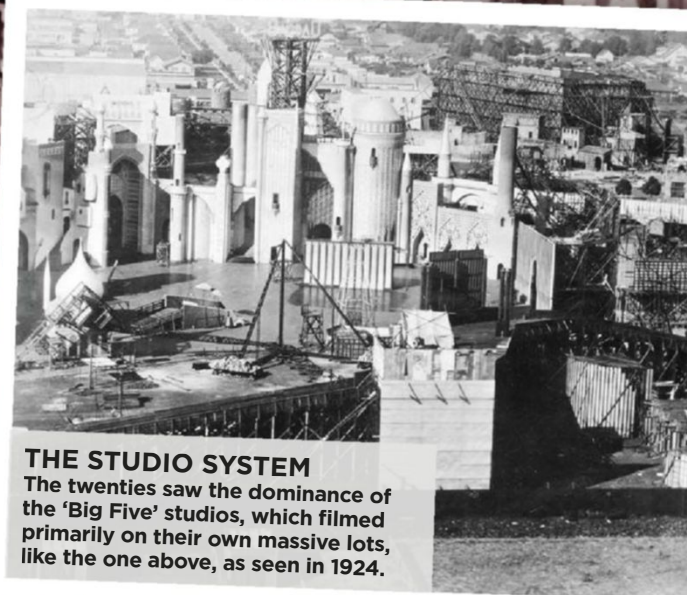
Filmmaker DW Griffith signs the contract for Pickford's first film (seen here standing on the right) with the independent production company United Artists. Also seen here (standing from left to right) are her future husband Douglas Fairbanks and Charlie Chaplin, as well as their lawyers.





THE JAZZ SINGER

Although not technically the first 'sound' movie, (that honour going to *Don Juan* a year earlier), *The Jazz Singer* is credited with ushering in the reign of the 'talkie' by being such a major hit, in 1927.



THE STUDIO SYSTEM

The twenties saw the dominance of the 'Big Five' studios, which filmed primarily on their own massive lots, like the one above, as seen in 1924.

THE MOVE TO SOUND

Stars who survived and thrived beyond the silent era...

JANET GAYNOR

Gaynor winning the Best Actress Oscar in 1929 for the film *Seventh Heaven*. She went on to star in a musical, *Sunny Side Up*, later the same year.



GRETA GARBO

In 1930, Garbo starred in her first speaking role, in *Anna Christie*. Her first line is: "Gimme a whiskey, ginger ale on the side, and don't be stingy, baby." She remained a film star until 1941.

CHARLIE CHAPLIN

Chaplin resisted the switch from silent films for years and made one of his silent classics, *Modern Times* (below), as late as 1936. He made his first 'talkie', *The Great Dictator*, four years later.



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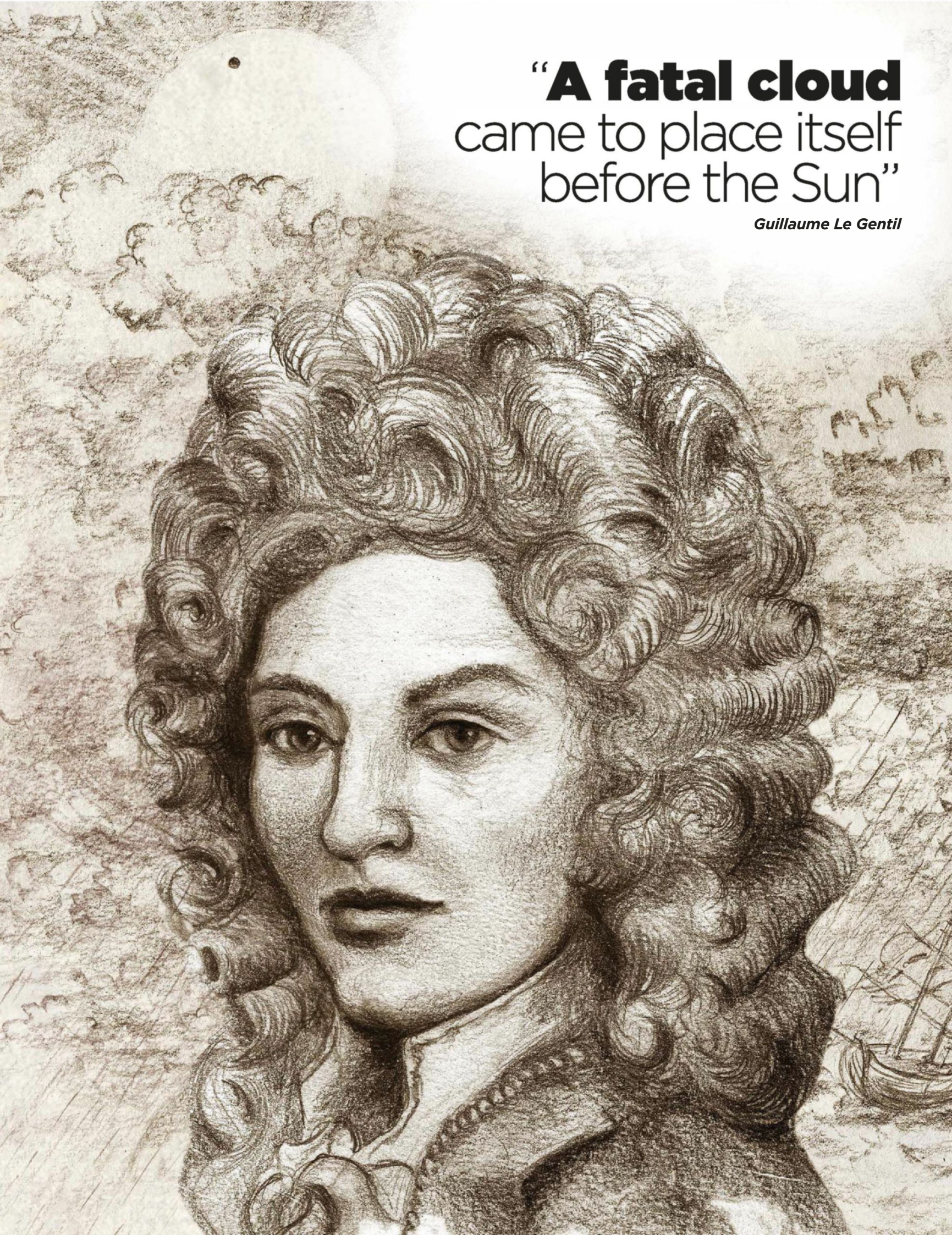
HOT PURSUIT
Le Gentil spent 11 years trying to observe Venus crossing the Sun, during a voyage that took him as far as the Philippines

GUILLAUME LE GENTIL AND THE FIRST SPACE RACE

Pat Kinsella meets the unfortunate French planet hunter, for whom the stars refused to align during a decade-long misadventure chasing Venus around the world

“A fatal cloud
came to place itself
before the Sun”

Guillaume Le Gentil



When you christen your child Guillaume Joseph Hyacinthe Jean-Baptiste Le Gentil de la Galaisière, it's fair to assume that you have high hopes for their future. And Guillaume Le Gentil, as he was more commonly known, must have thought he'd done his parents proud when he was selected by France's august Académie des Sciences to travel to India to observe the 1761 transit of Venus.

Fate, though, had other plans for this unfortunate Frenchman, who was about to endure the worst run of luck in the history of astronomy, as he pursued a passion that became an elusive obsession right around the globe for over ten years.

SPACE RACE

Le Gentil was far from the only person on Earth preparing to stare out to space at our celestial neighbour as it passed across the great glowing disc of our nearest star. Astronomers across Europe had known for decades that Venus – the second rock from the Sun, with an orbit that loops within our own planet's year-long circuit – would pass across the face of the Sun during a transit that would be visible in the Southern Hemisphere on 6 June 1761.

Scientific excitement about this event had been building since 1677, when Englishman Edmond Halley revealed his sums showing how mathematicians would be able to use timing data collected during the transit and combine it with trigonometry to calculate the distance between the Earth and the Sun.

This distance, later known as an astronomical unit (AU), would give scientists a yardstick with which to measure the rest of the cosmos. Combined with Kepler's laws of planetary motion, they then could work out distances between the planets of the Solar System.

In an era when the map of the world was far from fully coloured in, this concept was absolutely mind-blowing. Halley would die before the next transit took place, but he had helped herald the Age of Enlightenment by predicting the return of the comet that bears his name, and his ideas had serious gravity.

Venus only performs its party trick twice in each century, however. Because of the way the orbits of Earth and Venus align, the transits come in pairs, separated by eight years. Halley told the world that the next couplet of transits would occur in 1761 and 1769. If the scientists fluffed their lines, they would have to wait over 100 years for another chance.

Suffice to say, it was a big deal, and everyone wanted a slice of the action. Over 200 scientists and astronomers from various nations were in position around the world for the first transit. It presented a golden opportunity for scientists to pull together for the greater good of accumulating shared knowledge, but unfortunately, it took place amid the Seven

THE MAIN PLAYERS

GUILLAUME JOSEPH HYACINTHE JEAN-BAPTISTE LE GENTIL DE LA GALAISIERE

Known to his friends as Guillaume Le Gentil, he was a French astronomer born in Normandy on 12 September 1725. His attempt to record the transit of Venus was a disaster, but a crater on the Moon is named after him.



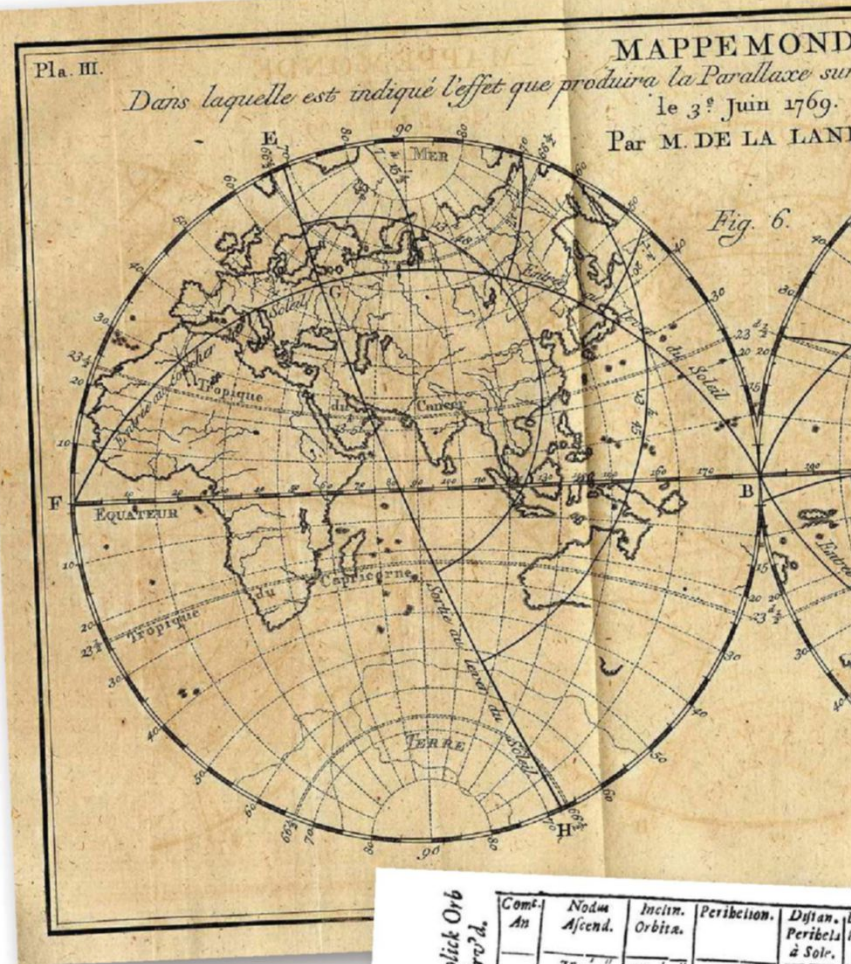
EDMOND HALLEY

English astronomer, geophysicist and mathematician who plotted the orbit of the comet named after him. In 1677, he also figured out that measuring the transit of Venus from different locations would enable scientists to compute the distance from Earth to the Sun, a measurement that would later become known as an astronomical unit.



JAMES COOK

While poor Le Gentil was having a total cauchemar, everything went comparatively smoothly for Captain Cook and British astronomer Charles Green, who embarked on a similar mission to the unfortunate Frenchman, and observed the 1769 transit in good conditions from Fort Venus in Tahiti.



UNLUCKY STARS

ABOVE: Diagrams showing the predicted path of Venus on 6 June 1761

FAR RIGHT: An engraving by Le Gentil depicting the ruins of Pondicherry, India

RIGHT: Halley's table of orbital data for comets observed between 1337 and 1698

BOTTOM RIGHT: Naval action between French and British off the coast of Pondicherry

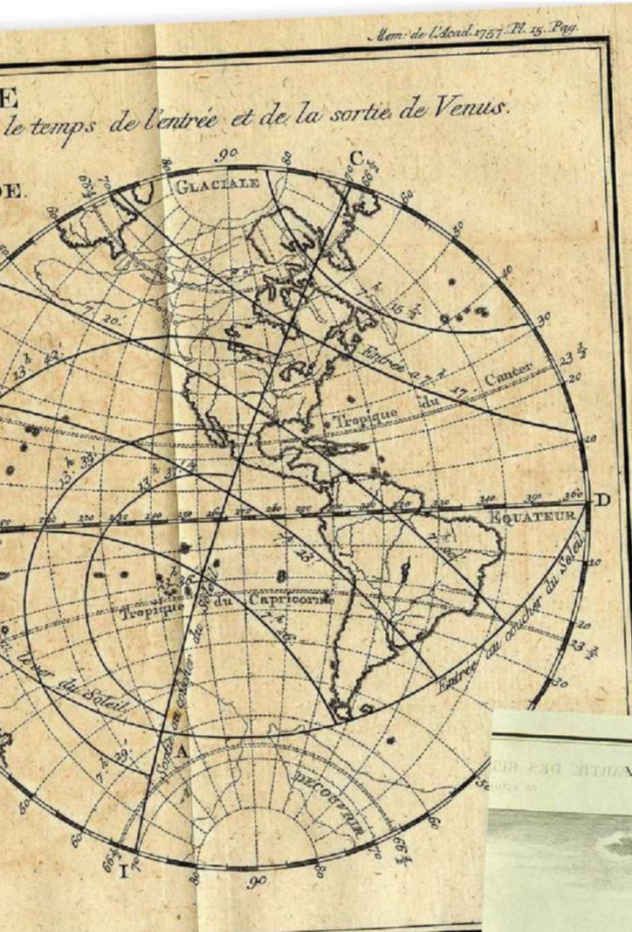
BOTTOM CENTRE: A portable astronomical quadrant like the one used by Le Gentil

BOTTOM LEFT: A model demonstrating Venus's transit

The Astronomical Elements of the Motions in a Parabolick Orb of all the Comets that have been hitherto duly observed.

Comet An.	Node Ascend.	Inclination of Orbita.	Perihelion.	Distance to Sol.
gr. °	gr. °	gr. °	gr. °	gr. °
1337	24.21	32.11	7.59	40666
1472	11.46.20	5.20	15.33.30	54273
1531	19.25	17.56	1.39	56700
1532	20.27	12.36	21.7	60910
1550	25.42	32.63	8.50	46350
1577	25.52	74.32.45	9.22	18342
1580	18.57.20	54.40	19.50	59628
1585	7.42.30	6.4	8.51	109158
1590	15.30.40	29.40.40	6.54.30	57561
1596	12.12.30	55.12	18.16	51293
1607	20.21	17.2	2.16	58680
1618	16.1	37.34	2.14	37975
1651	28.10	79.28	28.18.40	84750
1661	22.30.30	32.35.50	25.58.40	44851
1664	21.14	21.18.30	10.4.125	102575
1664	18.02	16.05	11.54.30	16649
1672	27.30.30	33.22.10	16.59.30	69739
1677	26.49.10	79.03.15	17.37.5	28059
1680	2.2	60.56	22.39.30	606125
1682	21.16.20	17.56	2.52.45	58228
1683	23.23	83.11	25.29.30	50020
1684	28.15	55.48.40	28.52.0	96015
1686	20.34.40	11.21.40	17.00.30	32500
1698	27.44.1	11.46	19.00.11.15	69129





Years' War, a conflict between the major powers of Europe that raged across the continent and in colonies around the world from 1756–63.

This made things tricky for several astronomers. London's Royal Society dispatched Jeremiah Dixon and Charles Mason (who later established the Mason-Dixon line in the US) to Sumatra for the 1761 transit, but their ship was attacked by a French frigate and almost sunk. At least Dixon and Mason made it to terra firma to observe the transit (they recorded it from the Cape of Good Hope). Le Gentil was less lucky.

2117

Year that the next transit of Venus will be visible from Earth

There was no hint of the upcoming chain of calamity when Le Gentil boarded a boat bound for Pondicherry, a French colony on the Coromandel Coast of India, in the March of 1760.

BITE OF THE PONDICHERRY

The journey initially progressed well, and the ship rounded the Cape of Good Hope without incident. However, upon landing on Île de France (now known as Mauritius) in July, they learned that the war, which was now being led by Britain on one side and France on the other, had entered a new stage. The ship's captain would travel no further east, and Le Gentil was stranded on the Indian Ocean island.

Eventually, in February 1761, he secured passage on a ship heading towards the south-east coast of the Indian peninsula, which promised to deliver him to Pondicherry by mid-April, in good time for the transit in early June. The elements intervened, however, and in the pre-monsoonal period the ship was blown seriously off course. For five frustrating weeks, unfavourable winds sent Le Gentil on a meandering course around the Indian Ocean and Arabian Sea.

When they eventually approached Mahé on the west coast of India, the ship's captain learned that Pondicherry had been taken by British forces, and he immediately turned around, heading back to Île de France. On 6 June, when the transit took place, Le Gentil was watching it woefully from the pitching deck of the boat somewhere in the midst of the Indian Ocean, unable to make any accurate observations at all.

Many of his fellow scientists had also endured frustrations. Bad weather scuppered some plans, and everyone had been wrong-footed by the 'black drop effect', an optical illusion that made Venus appear elongated as it passed across the Sun, affecting the precision of the timings, which needed to be spot-on for Halley's calculations to work.

The scientific world collectively took a deep breath. They had one more shot at getting it right, and eight years to get everything sorted. The stakes were high, and Le Gentil decided not to risk a return journey back to France. Instead he would sit it out in the Southern Hemisphere, making meticulous preparations for 1769.

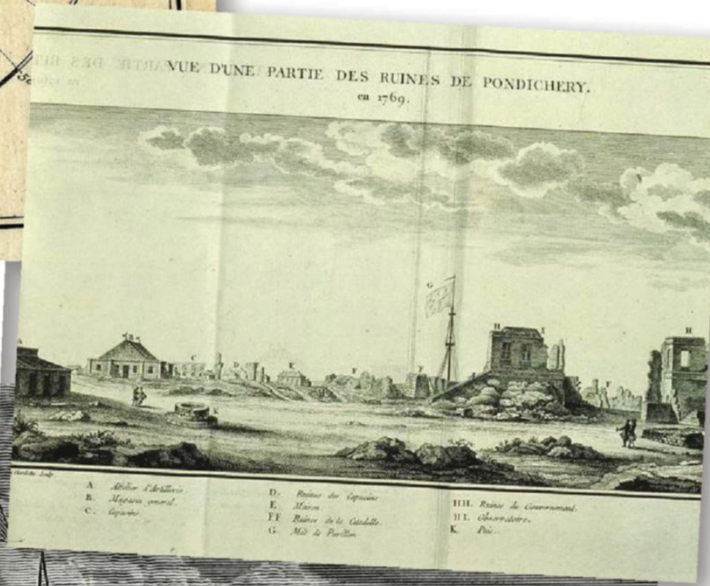
ROUND TWO

Le Gentil spent several years exploring and documenting Île de France and Île Bourbon (now known as Réunion). He also visited and charted the large African island of Madagascar, producing detailed maps of its relatively unknown east coast.

By 1765, the Frenchman had determined that Manila would be the best place to observe the upcoming transit. Armed with letters of support

8. Diff. Perihelia Sole.	Temp. equat. Perihelia.	Perihelion à Noda.
d. h. m.	gr. °	
1709230 June 2. 6.25	46.22. 0	Direct.
1734581 Feb. 28 22.23	123.47.10	Retrog.
1753483 Aug. 24 21.18	107.45. 0	Retrog.
17680309. 19 22.12	30.47. 0	Direct.
1766421 Apr. 21.20. 3	103. 8. 0	Direct.
1734477. 26 18.45	103.30. 0	Retrog.
1754500 Nov. 28 15.00	90. 8.30	Direct.
1738850 pr. 27 19.20	28.51.30	Direct.
1700882 Jan. 29. 3.45	51.23.50	Retrog.
1700581 Jul. 31.19.55	83.56.30	Retrog.
1768490. 16. 3.50	108.05. 0	Retrog.
1794980. 29 12.23	72.47. 0	Direct.
1781400 Nov. 2.15.40	59.51.20	Direct.
171772 Jan. 16.23.41	33.28.10	Direct.
17044 Nov. 24.11.52	49.27.25	Retrog.
17309 Apr. 14. 5.15	156. 7.30	Retrog.
173470 Feb. 20. 8.37	109.29. 0	Direct.
17072 Apr. 26.00.37	99.12. 5	Retrog.
17105 Dec. 8.00. 5	9.22.30	Direct.
17577 Sept. 4.07.39	108.23.45	Retrog.
17343 Jul. 3. 2.50	87.53.30	Retrog.
17339 Mai. 29.10.16	29.23.00	Direct.
17183 Sept. 6.14.33	86.25.50	Direct.
17660 Oct. 8.16.57	2. 7. 0	Retrog.

This Table needs little Explication, since 'tis plain enough from the Titles, what the Numbers mean. Only it may be observ'd, that the Perihelium Distances, are estimated in such Parts, as the Middle Distance of the Earth from the Sun, contains 100000.



In the first great space race, the major European powers all wanted to lead the field, and sent astronomers to far-flung places to record the transits. This multinational approach was great for science, as taking many measurements helped to improve their precision.

Guillaume Le Gentil departs his homeland, having been commissioned by the French Académie des Sciences to observe the 1761 transit of Venus from a vantage point in Pondicherry, India.

Having sailed around the Cape of Good Hope, Le Gentil arrives on Île de France (now Mauritius) to discover that war has erupted between France and Britain, and he's unable to progress further east.

Le Gentil finally secures passage on a ship bound for India's Coromandel Coast, but the boat is blown dramatically off course by pre-monsoonal weather and ends up drifting. Somewhere near Mahé on the west coast of India, the ship's captain learns that Pondicherry has been taken by the

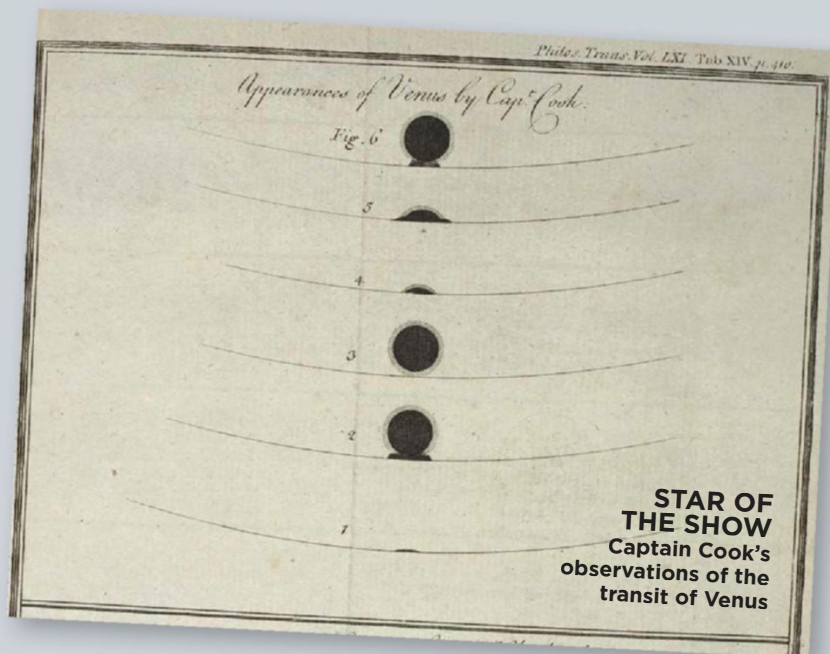
Not a quitter, Le Gentil determines to remain in the region for eight years to prepare for the 1769 transit of Venus. While waiting, he divides his time between Île de France and Île Bourbon, and maps the east coast of Madagascar.

Having decided that Manila would be the best place to observe the transit, Le Gentil arrives three years ahead of time to begin preparations. However, the Governor believes him to be a spy, and is openly hostile to Le Gentil's presence. On diplomatic advice, he scarpers to India.

Finally arriving in Pondicherry on 27 March 1768, Le Gentil is made welcome and begins to build an observatory and study Indian astronomy. However, when the transit takes place on 4 June 1769, the sky is completely obscured by clouds.

Having recovered from a deep depression, Le Gentil attempts to return to France, but his journey is interrupted first by the ravages of dysentery (leading to an emergency stop in Île de France) and then a hurricane, which damages his ship and forces another return to Île de France.

Finally, on 31 March 1771, Le Gentil leaves Île de France for the last time. After a rough voyage around the Cape, he lands at Cádiz in Spain and travels overland through the Pyrenees to France. He arrives to discover that everyone thinks he's dead, his wife has remarried, his heirs are fighting over his estate and he has been dropped from the Académie des Sciences.



from the French Académie and the Governor of Mauritius, Le Gentil boarded a Spanish ship bound for the Philippines in May, arriving in Manila in August 1766.

Sadly, the governor of the Spanish colony was instantly suspicious and openly hostile towards Le Gentil, whom he believed to be a spy. After seeking consular advice, the Frenchman decided to leave, and with the Seven Years' War now over and Pondicherry back in French hands, he reverted to his original plan for the first transit.

Escaping Manila on a Portuguese ship, Le Gentil finally arrived in Pondicherry on 27 March 1768, where he was warmly welcomed by the Governor. The scientist promptly got to work, building an observatory and studying Indian astronomy.

In this postwar period, a genuine spirit of scientific collaboration prevailed between Britain and France in regards to the 1769 transit. The British had their best man, Captain James Cook, on the job, having dispatched him to

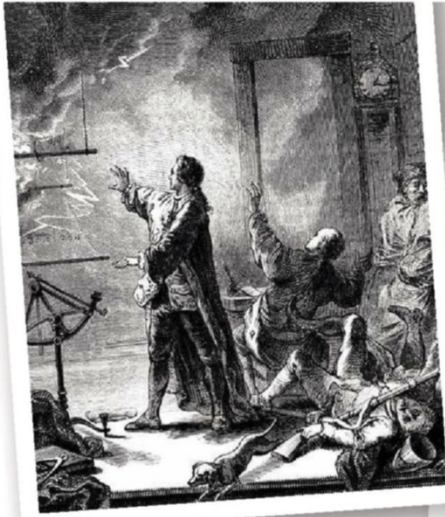
Tahiti with astronomer Charles Green, and although the two missions were funded separately, the data produced by Le Gentil and Cook/Green would be combined. At least that was the plan.

On the evening of 3 June 1769, the eve of the transit, the sky above Pondicherry was perfectly clear. Le Gentil even took the Governor and his guests on a tour of the night sky, pointing out features including some of Jupiter's satellites, and he retired to bed feeling positive. During the night, however, the fretting Frenchman awoke to see the sky was overcast. "I felt doomed," he wrote. "I threw myself on the bed, without being able to close my eyes."

Meanwhile, the situation outside his window worsened. A storm brought ever-thickening clouds and the Sun was utterly obscured for the entire duration of the transit. Almost immediately afterwards, conditions cleared and the rest of the day was sunny, and to rub further salt in Le Gentil's wounds, reports from Manila revealed that they had enjoyed a cloudless day.

DOWN AND OUT

Sickened by his ill luck, Le Gentil fell into a deep depression for several weeks. When he finally started feeling better and began arranging transportation back to France, he contracted dysentery. Still unwell, he departed



WATCH THIS SPACE
ABOVE: Jean-Baptiste Chappe d'Auteroche sees the 1761 transit from Siberia
RIGHT: A flyer from 1769 alerting astronomers and the public to the transit

Pondicherry in March 1770, but illness necessitated a stop at Île de France. By July, Le Gentil was well enough to travel again, but he was unable to secure a passage until November, after the monsoons. The weather intervened once again, however, and after being hammered by a hurricane, the badly damaged ship was forced to return to Île de France for repairs.

Le Gentil's woes continued, and his next attempt to return home, which began on 31 March 1771, was afflicted by yet more rough weather around the Cape. He finally disembarked on European land at Cádiz in Spain, and then travelled overland to France, setting foot on homeland soil on 8 October 1771.

Unfortunately, it was not to be a happy homecoming. Having been missing in action for 11 years, six months and 13 days, Le Gentil's family had assumed him dead. His wife had remarried and his heirs were busily dividing up his estate. He'd also lost his position at the Académie. It took many years of legal shenanigans and the intervention of the King of France before Le Gentil finally managed to regain his position and most of his possessions. He remarried

and continued with astronomy, eventually publishing a two-volume memoir detailing his decade-long disaster entitled *A Voyage in the Indian Ocean*.

In some respects, though, luckless Le Gentil got off lightly.

Fellow Frenchman, Jean-Baptiste Chappe d'Auteroche, who recorded the 1761 transit in Siberia while being protected by armed Cossacks, observed the 1769 transit from Baja California in the midst of a typhus epidemic. He contracted the disease just after recording the transit, and managed to fight the fever just long enough to make a critical lunar



sighting to establish his longitude, an essential part of the calculation. D'Auteroche was the only astronomer to observe both 18th-century transits from start to finish, but it cost him his life, and he was buried in San José. Le Gentil, on the other hand, is believed to have lived happily for another 21 years. ○

GET HOOKED

READ

Transit of Venus, a play written by Maureen Hunter in 1992 (subsequently made into an opera) all about the travels and travails of Guillaume Le Gentil

WHAT HAPPENED NEXT?

Scientists from around the world collaborated to calculate the distance between planet Earth and the Sun. The figure arrived at was 95 million miles, which is less than three per cent different to the modern calculation of 93 million. After the next pair of transits, observed in 1874 and 1882, accuracy was improved to within one per cent of the modern figure.

200

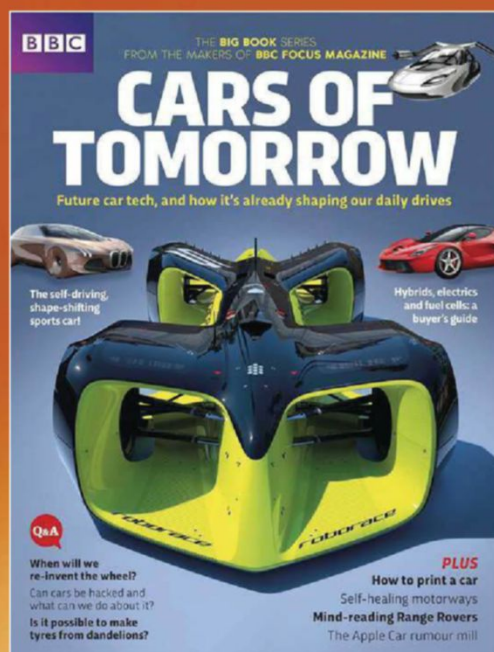
Number of scientists in position around the world to observe the 1761 transit of Venus

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QUEEN OF HEARTS

When Catherine's husband Tsar Peter III alienated his people, they instead turned to his wife, and she was proclaimed the rightful ruler



CATHERINE THE GREAT

EMPRESS OF RUSSIA

Was its most renowned female ruler an astute military leader and spearhead of human rights, or a deceitful harlot who only served the privileged?

ALAMY X2



1744 THE BETROTHAL

Catherine arrives in the Russian capital of Saint Petersburg from her homeland of Prussia. She enchants Empress Elizabeth of Russia, who offers Catherine's hand in marriage to her nephew Peter, the heir to the Russian throne.



JUNE 1762 A HUSBAND BETRAYED

As their relationship grows ever more dysfunctional, Catherine colludes in a coup against her husband, the Tsar. Peter is forced to abdicate and dies a few days later, likely murdered.



When Catherine Alekseyevna, Empress Consort of all the Russians, awoke on 28 June 1762, it was to startling news. She jumped out of bed, hastily got dressed, and rushed to the carriage that was waiting for her in the grounds of her palace, the Peterhof. Such was Catherine's haste that morning that she didn't have time to do her hair before jumping in her carriage. Instead, her expensive French hairdresser attended to it while she swept through the streets of Saint Petersburg.

As the carriage picked up speed, Catherine can hardly have failed to notice that crowds were thronging the roadside to hail her progress. When she reached her destination, it soon became clear why. Her husband, Tsar Peter III of Russia, had been deposed in a coup, led away in tears to a very uncertain future – and Catherine was to replace him.

If Catherine had considered the magnitude of the task that confronted her that morning, she may have headed straight back to bed rather than boldly accept the army's invitation to become their tsarina. Russia in the mid-18th century was a vast, unruly and, in many ways,

backwards country, blighted by poverty and massive inequality. Thanks to her riotous love life, her passion for high art and her fabulously expensive tastes, Catherine would carve out a reputation as one of the most colourful rulers in European history, arguably becoming in the process the most powerful woman in history. But it was her achievement in turning Russia from basket case into a bona fide world superpower that earned her that most prized of epithets, 'the Great'.

ENCHANTRESS OF RUSSIA

Catherine's accomplishments are made all the more remarkable by the fact that she didn't have a single drop of Russian blood in her body. She was born Sophie Friederike Auguste von Anhalt-Zerbst-Dornburg on 2 May 1729 in what was then the city of Stettin (now Szczecin in Poland) to Prussian aristocrats. Her mother, Princess Johanna Elisabeth of Holstein-Gottorp, was a very small fish in Europe's royal pond but she did have limitless ambition for her daughter and, just as importantly, connections. And it was one of these connections that enabled her to wangle an invitation for the young Catherine to the court of Empress Elizabeth of Russia. Luckily for Johanna, Catherine was a gifted

girl. She was pretty, intelligent and, above all, charming, and her magnetic personality had soon enchanted Elizabeth – so much so that the Russian empress engineered Catherine's engagement to her nephew, Peter.

Catherine's union with Russia's heir apparent would catapult her onto the world stage. But as a relationship, it was a car crash. She was worldly and cultured, devouring books on politics and history, and later exchanging letters with the French Enlightenment philosopher Voltaire. Peter was self-absorbed and immature, "talking", as Catherine wrote, "of nothing but soldiers and toys. I listened politely and often yawned but did not interrupt him."

Their marriage got off to an awful start – on their wedding night Peter left his new wife in bed while he caroused downstairs with his friends – and, with Peter's elevation to tsar on his aunt's death in December 1761, things only got worse. Soon he was taking mistresses and openly talking of pushing Catherine aside to allow one of them to rule with him. Not even the birth of a son, Paul, could save the marriage – rumours abounded that Paul's father was in fact Catherine's lover, the handsome courtier Sergei Saltykov.

He may have been tsar, but Peter suffered one crucial disadvantage in his confrontation with his wife – he was reviled by swathes of the Russian army. So when Catherine engineered a coup against him – with the help of artillery officer Grigory Orlov – it quickly picked up a devastating momentum. Peter, it was said, "gave up the throne like a child being put to bed".

For the most part, Russia's church, military and aristocracy welcomed their new female

ROBERT K MASSIE, author of *Catherine the Great*
"It revealed the two faces of the Empress, a woman who, alternately and with no warning, charmed and intimidated"

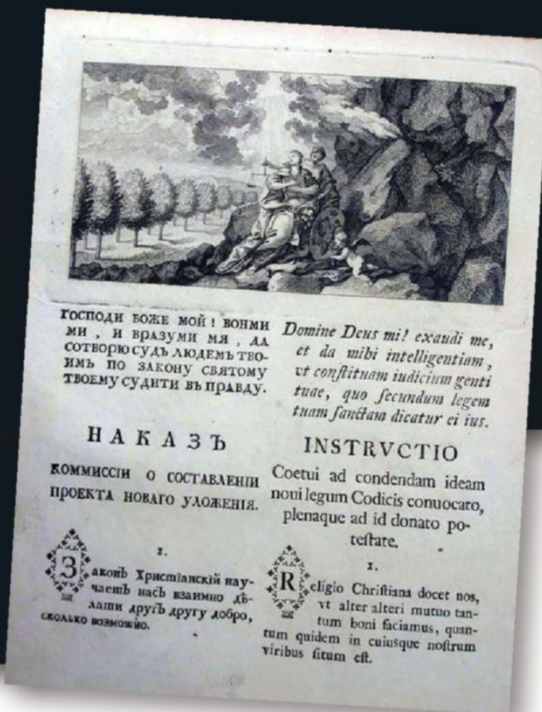


1764 ART COLLECTOR

Catherine founds the Hermitage, which will become one of the world's premier art galleries. Soon, its awe-inspiring galleries will contain 38,000 books and 10,000 drawings.

1767 ALL MEN ARE EQUAL...

Catherine proclaims the equality of men before the law in her great statement of legal principles, the Nakaz. Those anticipating greater freedoms for the Russian people would be disappointed, and Catherine grows increasingly despotic as her reign progresses.



“The sight of this famous woman so impressed me that I found it impossible to think of anything”

Elisabeth Vigée Le Brun, court painter

ruler. But the Empress had even bigger fish to fry. She wanted Europe's superpowers – Britain and France – to accord her nation the respect that she believed it deserved, and that could only be achieved on the military stage.

CLASH OF EMPIRES

Over the next three decades, Catherine's armies embarked on a series of military endeavours that would establish Russia as an imperial heavyweight. In the east she partitioned Poland and swallowed up swathes of Lithuania and Belarus. In the south, she took the fight to the Ottoman Empire, with spectacular results.

In their confrontations with the Turks, the Russians were greatly hampered by the lack of a naval presence on the Mediterranean. To overcome this Achilles' heel, Russia's generals came up with an audacious plan – to sail a fleet over 4,000 miles from its home port in the Baltic around the west of France and Spain, and up the Mediterranean to take the Turks by surprise. Catherine signed off on the plan, and the payback was game-changing – a famous victory at the Battle of Chesma in July 1770 (in

which Russia lost at most 600 dead to the Turks' 9,000) and a foothold in the Mediterranean. She would later annex the Crimea.

More military victories followed – many of them masterminded by the dashing head of Catherine's armies, Grigory Potemkin. By the mid-1770s, however, Potemkin was a lot more than just the empress's chief military adviser – he was her lover. Catherine was smitten, calling him “My colossus... my tiger”, and writing: “Me loves General a lot.” If anyone can be called the love of Catherine's life, it was he.

But he was far from the last. After her affair with Potemkin fizzled out, Catherine took on a string of new lovers – many of them, curiously, recommended by Potemkin himself. And as the Tsarina grew more elderly, so her new beaux appeared to grow younger – the last, Prince Platon Zubov, was 38 years her junior. Sharing a bed with someone old enough to be your grandmother may not have been to everyone's taste, but it certainly had its compensations. Catherine routinely bestowed her paramours with titles, land and palaces – and, in one case, more than a thousand serfs.

BATTLE OF THE KINGS WHO WAS THE GREATEST OF THE GREATS?



PETER THE GREAT, 1672–1725

That Catherine invested so much energy in presenting herself as the new Peter the Great is testament to her predecessor's considerable achievements as Russian tsar. In many ways, Peter's reign presaged her own – he expanded Russia's empire, spearheaded a cultural revolution and turned his ailing nation into a true world power. Unlike Catherine, he also happened to be a sadistic killer.



CNUT THE GREAT, c995–1035

Cnut's historical reputation has been trashed by that apocryphal tale of his deluded attempts to turn back the waves. In reality, he was an accomplished monarch, uniting the kingdoms of England, Denmark and Norway into a formidable North Sea empire.



ALFRED THE GREAT, 849–99

In the 870s, the English were a benighted, divided people, terrorised by marauding Viking armies. But then King Alfred of Wessex turned things around, putting the Vikings to flight, transforming his realm's justice system and styling himself as King of all Anglo-Saxons. England would never be the same again.



ALEXANDER THE GREAT, 356–323 BC

Alexander has for centuries been held up as a paragon of military brilliance. This king of the ancient Greek realm of Macedon conquered vast swathes of Asia and east Africa, all by his early 30s. He was instrumental in the rise of Greek as the west's dominant culture, and is often ranked as one of the most influential figures in world history.



CYRUS THE GREAT, c590 OR 580–529 BC

At one point, Cyrus presided over an empire that stretched from the Mediterranean Sea in the west to the Indus river in the east. It was the largest empire that the world had yet seen, and if that doesn't qualify him as a ‘great’, the fact that he was, by ancient standards, tolerant of foreign cultures, probably does.



5-7 JULY 1770 OTTOMAN DEFEAT

Catherine's Russia confirms its status as a military power to be reckoned with following a spectacular naval victory over the Ottoman Empire in the Battle of Chesma.

Eligible young army officers weren't alone in falling for Catherine's charms. As her global reputation grew, more and more members of Europe's intelligentsia developed a fascination with her, some travelling east to report back on the enigmatic woman behind Russia's renaissance.

"The double doors opened and the Empress appeared," wrote the French portrait artist Madame Vigée Le Brun after observing Catherine at a gala. "I have said that she was quite small, and yet on the days when she made her public appearances, with her head held high, her eagle-like stare and a countenance accustomed to command, all this gave her such an air of majesty that to me she might have been Queen of the World."

If Catherine the Great had one overarching goal as empress, it was, in her words, to "drag Russia out of its medieval stupor and into the modern world". In her eyes, that meant introducing Enlightenment values to the darkest recesses of Russian life, and investing vast sums of energy into promoting the arts. At the latter of these two ambitions, Catherine has few equals. She presided over a golden age of Russian culture, buying the art collection of Britain's first prime minister, Robert Walpole, snapping up cultural treasures from France and, above all, creating one of the world's great art collections, the Hermitage in Saint Petersburg. This was no ordinary museum but a shrine to the Enlightenment, and in its galleries Catherine placed 38,000 books, 10,000 drawings and countless engraved gems.

But all this cost money. Eye-watering sums of money. Catherine was an inveterate spendthrift,



1774 ROYAL AFFAIR

Catherine embarks on a love affair with the dashing Russian nobleman Grigory Potemkin. He will go on to become her effective joint ruler, and her greatest love.

and while she frittered 12 per cent of Russia's national budget on her court alone, millions of serfs continued to live in grinding poverty.

BROKEN PROMISES

When Catherine assumed the throne, it appeared that she would make some serious strides towards dismantling a system that, for centuries, had condemned Russia's serfs to work as virtual slaves for their masters. She sponsored the 'Nakaz' (or 'Instruction'), a draft law code heavily influenced by the principles of the French Enlightenment, which proclaimed

"All well and good if your Majesty were a French coquette, but how can an empress be so inconstant?"

Voltaire writing to Catherine

the equality of all men before the law and disapproved of the death penalty and torture.

But draft stage is as far as the plans got. Catherine never followed through on the Nakaz, and a few years later, thousands of serfs were rising in revolt. They were led by a Cossack called Yemelyan Pugachev, who not only promised their freedom but declared that he was Catherine's deposed husband, returning to reclaim his throne. This may sound faintly



17 NOVEMBER 1796 ANIMAL LOVER?

Catherine the Great dies after suffering a stroke on the toilet. Rumours that the fatal stroke was a result of performing a sexual act on a horse are entirely unfounded.

ridiculous, but for Catherine it was deadly serious and, as the rebels hunted down and butchered 1,500 nobles, she struggled to come up with a response to the insurrection.

When she eventually did, she was utterly ruthless. The revolt was crushed, Pugachev was captured, and he was forced to endure a thoroughly unenlightened death – first he was hanged and then his limbs were chopped off. Before long, Catherine enacted a series of laws that greatly increased the nobility's privileges. For the vast majority of Russians, freedom would have to wait.

By now, Catherine was an old woman increasingly forced to consider what would happen to her adopted nation after her death. She had a frosty relationship with her son Paul, and made it abundantly clear that she'd far prefer her grandson Alexander to succeed her to the throne. It was a battle she would

lose – in the short term at least. On 16 November 1796, Catherine had a stroke while on the toilet (not while performing a bizarre sexual act, as a stubborn but completely fabricated rumour has it) and died the following day. Paul was crowned Tsar and, in a remarkable show of spite towards his mother, immediately passed a law banning a woman from ever again taking the throne. But his triumph was to be short-lived. Like his father, he was deposed and assassinated in a

coup – to be replaced by Catherine's favourite, Alexander. Most things that Catherine the Great had willed during her extraordinary life came to pass, and it seems that they continued to do so even beyond the grave. ☐



WHAT DO YOU THINK?

Who Catherine history's most powerful woman?

Email: editor@historyrevealed.com

FATAL ATTRACTION

Though it's certain that Catherine condoned the coup, whether she was responsible for Peter's murder is in question



THE GREAT DEBATE DID CATHERINE KILL HER HUSBAND?

Coups were hardly rare in early-modern Europe, but what makes Tsar Peter III's downfall in the summer of 1762 so intriguing is the identity of those who masterminded it. That Catherine was complicit in the deposition of her husband is almost beyond doubt – the couple's relationship had long turned toxic, she had everything to gain from his removal (the Russian throne), and her lover, Grigory Orlov, was the public face of the

revolt. But what is less certain is Catherine's role in what happened next.

The coup caught Peter completely on the hop. After formally abdicating, he was arrested, taken to the village of Ropsha, and placed in the custody of Alexei Grigoryevich Orlov, Grigory's brother. A few days later he was dead.

The official explanation was that he had fallen victim to 'haemorrhoidal colic'. But few doubted that he had been murdered.

The big question is, did Catherine order the killing?

The fact is, we just don't know. Most historians agree that she could, if she'd wished, acted to save Peter – by, for example, allowing him a passage into exile – and that she had lots to gain by ridding herself of him for good. But proving that the new empress had her husband's blood on her hands has so far proved utterly elusive.

Q&A

YOU ASK, WE ANSWER

IN A NUTSHELL p83 • **HOW DID THEY DO THAT?** p84
• **WHY DO WE SAY...** p86 • **WHAT IS IT?** p87

OUR EXPERTS

EMILY BRAND

Social historian, genealogist and author of *Mr Darcy's Guide to Courtship* (2013)



GREG JENNER

Consultant for BBC's *Horrible Histories* series and author of *A Million Years in a Day* (2015)



JULIAN HUMPHRYS

Development Officer for The Battlefields Trust and author



SANDRA LAWRENCE

Writer and columnist, with a specialist interest in British heritage subjects



RUPERT MATTHEWS

Author on a range of historical subjects, from ancient to modern



MILES RUSSELL

Author and senior lecturer in prehistoric and Roman archaeology at Bournemouth University



NOW SEND US YOUR QUESTIONS

Vexed by the Victorians? Muddled by the Middle Ages? Whatever your historical question, our expert panel has the answer.



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revealed.com

HELLO, BOYS AND GHOULS

Halloween blends themes of harvest thanksgiving – hence pumpkins and apples – and communion with the dead



WHAT ARE THE ORIGINS OF HALLOWEEN?



Before it became the modern festival of pop-culture horror, Halloween was simply the evening before All Hallows Day – the Christian feast commemorating the dead, particularly saints and martyrs. Introduced in the early-7th century, All Hallows (or All Saints') Day was originally a celebration of rebirth in spring. But in AD 835, the date was switched to

1 November in an attempt to Christianise earlier pagan harvest festivals. One such celebration was Samhain, a feast marking the start of winter. This was believed to be a time when barriers between the worlds of the living and dead were broken, and significant offerings were made to the spirits of the departed – themes echoed in ghoulish Halloween celebrations today. **MR**

DID YOU KNOW? ASSASSIN ANCESTOR

Henry Bellingham, the Conservative MP for North West Norfolk, is related to (and possibly a descendant of) John Bellingham, who shot Prime Minister Spencer Perceval in 1812.



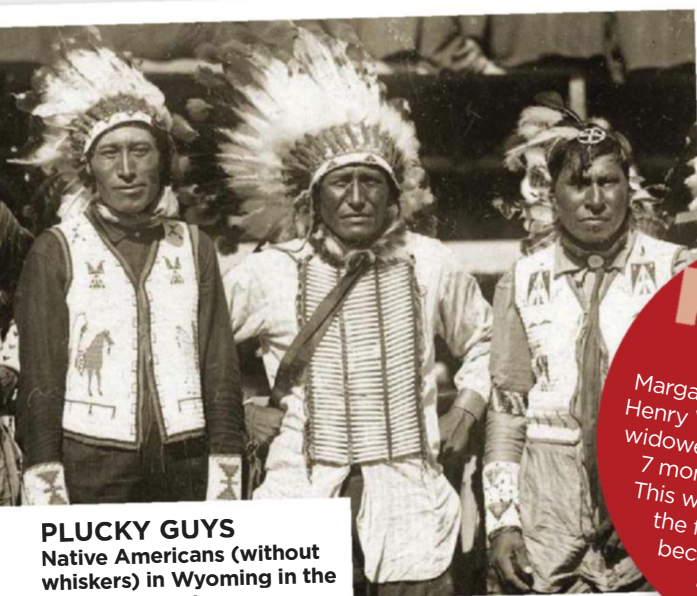
GETTY X2

257

The number of Texans who tried to defend the Alamo against the Mexican army in 1836. All died.

WHY DO NATIVE AMERICAN MEN NOT HAVE BEARDS?

US federal law recognises 556 Native American tribes, each with its own traditions, so it's impossible to generalise about such diverse groups. Though genetic research suggests that the Stone Age ancestors of these peoples were Asian, so might naturally have thinner hair follicles than (for example) European men, Native Americans can – and did – grow beards, whiskers and moustaches. Historically, those choosing hairlessness employed various depilating techniques: wooden tweezers, mussel-shell pluckers, razors made from clamshells, and charcoal (to singe hairs). GJ



PLUCKY GUYS
Native Americans (without whiskers) in Wyoming in the early 20th century

DID YOU KNOW?

CHILD BRIDE

Margaret Beaufort, mother of King Henry VII, was just 13 when she was widowed in 1456 – but was already 7 months pregnant with Henry. This was her second marriage – the first had been annulled because she was only six at the time of the wedding.



BLACK GOLD
Jesse Owens tops the podium after winning gold in the long jump in the 1936 Berlin Olympics

Did Hitler really snub Jesse Owens in 1936?

The star of the 1936 Berlin Olympics was Jesse Owens, the black American athlete who won four gold medals. The Nazis had hoped the games would demonstrate the superiority of the white Aryan 'race' – but Owens' triumph ruined their plans. And though it's true that Hitler did not present Owens' gold medal, it wasn't a personal snub: Hitler wanted to present medals only to German winners. When he was told he had to congratulate all of the winners, the Führer decided not to present medals to anyone. SL

WHO INVENTED THE GUN?

The same people who invented gunpowder – the Chinese, who stumbled across the explosive effects of mixing charcoal, sulphur and saltpetre in the ninth century. Gunpowder was primarily used for fireworks, but in the 10th century, the Chinese invented the fire lance. This was a spear tipped with a firework that could shoot out flames and small missiles – the forerunner of today's guns. By the 13th century, gunpowder had spread into Europe, probably via the Silk Road trade routes through Central Asia. The first cannons appeared in Italy around 1320, and hand-held guns evolved at the end of the 14th century. JH



GUNNING FOR GLORY

A 10th-century Chinese mural features the first-known depiction of a fire lance

DRINK, DRINK. FAN, FAN. RUB, RUB.

ADMIRAL HORATIO NELSON, 21 OCTOBER 1805

The Battle of Trafalgar was one of the pivotal clashes of the Napoleonic Wars. The Royal Navy, led by Admiral Lord Horatio Nelson aboard his flagship HMS *Victory*, triumphed – but Nelson himself was fatally wounded. Several patriotic and moving last words have been attributed to the great seaman, but according to the ship's chaplain, Alexander Scott, he died after repeating these terse appeals to alleviate thirst, heat and pain.



IN A NUTSHELL

THE OIL CRISIS

An oil shortage brought the US to its knees and caused shockwaves around the world

What was the oil crisis?

The 12-year period between 1967 and 1979 saw a series of energy crises, the most significant of which arose in 1973, when the Organization of the Petroleum Exporting Countries (OPEC) implemented what it referred to as “oil diplomacy”. This effectively prohibited the US (and the Netherlands) from buying oil from OPEC.

What was behind the embargo?

In early October 1973, on the Jewish holy day of Yom Kippur, the combined forces of Egypt and Syria launched an attack against Israel in an attempt to win back territory lost during the third Arab-Israeli war of 1967. Supported by Soviet arms, the Egyptian-Syrian forces looked set to triumph, until the US, under President Richard Nixon, stepped in to aid Israeli troops with military support.

A ceasefire to what became known as the Yom Kippur War was reached at the end of October but US support of Israel – a state that much of the Arab world refused to recognise – was not so easily forgiven. On 17 October, OPEC declared that any nation

that had supported Israel would be prohibited from buying any of its oil.

What were the immediate effects on the US?

At the time of the embargo, America's oil reserves were already dangerously low, with just 52 billion barrels in domestic reserves – enough to last about 10 years. What's more, with the country importing some 27 per cent of its crude oil requirements each year, the embargo had a crippling effect on daily life.

During the conflict, OPEC imposed oil production cuts to Israel's allies of five per cent per month, which it threatened to continue and increase until Israel withdrew from the Palestinian territories it had been granted in 1948. In December, OPEC made a further announcement that its individual members would be allowed to set their own prices on exported oil. The price of oil proceeded to rise, increasing by 130 per cent in just two months from October. Between 1972 and late 1974, the cost of a barrel soared from \$3 to nearly \$12 – a leap of 387 per cent.

How did people react?

Oil provided 95 per cent of transportation energy in the US, and price rises quickly trickled down to consumers, with drivers among the worst hit. Lengthy queues formed at petrol stations, with ones of more than four miles reported in New Jersey. In a bid to conserve fuel, in 1974 the US Congress imposed a nationwide limit of 55mph (89km/h), estimating that vehicles travelling at that speed would consume 17 per cent less fuel than driving at 75mph (120km/h).

Many US citizens were unaware of just how much of the country's oil was imported, so the shortages and price hikes left them confused – and, often, stranded at the pumps. It was not unusual for petrol prices to increase twice in the same day. A number

of rationing measures were introduced

– for example, alternating the days on which owners of cars with odd-and-even-numbered licence plates were allowed to fill up. Some petrol stations opened for just a few days a week, and eventually a petrol-rationing


system was introduced to combat panic buying.

At home, many people found themselves, quite literally, left out in the cold, with no fuel to heat or light their homes. Demand for smaller, fuel-efficient, Japanese-made cars rocketed, sending the American car industry, with its once-booming trade in huge gas-guzzling automobiles, into free fall.

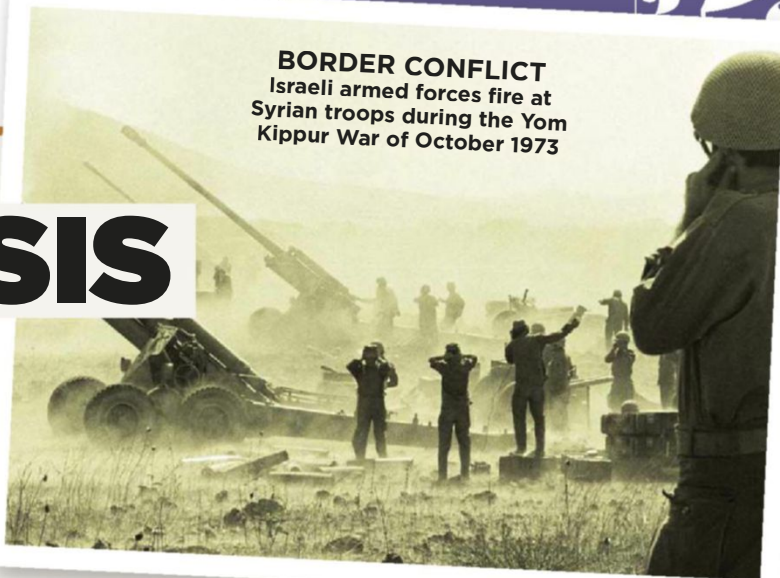
Europe, too, felt the effect of the increase in oil prices. Petrol rationing was introduced in Britain in 1973, with ration books issued on the basis of each car's engine size and horsepower. National speed limits were also imposed to reduce consumption. When winter arrived, British Prime Minister Edward Heath urged people to heat just one room in their homes.

What was the long-term impact of the oil crisis?

The OPEC embargo ended in March 1974, but its effects were long lasting, and a global recession seemed imminent. By August 1976, retail price inflation in Britain hit 27 per cent, and inflationary wage increases were accompanied by a rise in unemployment, which reached more than one million. Oil prices remained high, and in the US economic growth did not resume for three years.

The events of 1973–4 had a more fundamental impact, too. They highlighted the need to explore alternative sources of energy, and a greater interest in renewable energy and nuclear power emerged as a result. 

BORDER CONFLICT
Israeli armed forces fire at Syrian troops during the Yom Kippur War of October 1973



PANIC AT THE PUMPS
Drivers push their cars to petrol stations, where many fill cans to stockpile fuel at the crisis' peak

HOW DID THEY DO THAT?

MARK I TANK

The British secret weapon that revolutionised ground warfare



On 15 September 1916, in the midst of the Battle of the Somme, German troops were faced with a terrifying new and powerful war machine: the tank. This was the Mark I, designed and built amid great secrecy to break the stalemate of trench warfare by penetrating enemy lines. Heavily armoured and able to travel over many terrains, the Mark I could traverse the cratered, blasted battlefields, flatten barbed-wire barriers, and demolish gun emplacements. The first model was, though, riddled with flaws. Many of these early tanks broke down and conditions inside were appalling: swelteringly hot, cramped, pitch dark and choked with engine and cordite fumes. Yet a third of the tanks reached the enemy's trenches, visiting a new horror on the German infantry.

STEERING TAIL

The wheels designed to assist steering were ineffective and easily damaged.

ARMAMENT

The 'male' version carried two 57mm (2.24in) Hotchkiss QF navy guns, which could fire forward and to the side. The 'female' version was armed with machine guns.

ENGINE

The large Daimler engine occupied much of the tank's interior, generating temperatures of over 50°C (122°F) – creating challenging conditions for the crew.

PROTECTION

The top of the tank was fitted with a wooden frame covered with wire mesh to protect it from grenade attacks.

1916–2016



100 YEARS OF THE TANK



SOMME DEBUT

The Mark I tank's appearance at Flers-Courcelette on 15 September 1916 was a surprise for British and German troops

HOTCHKISS GUN

The long-barrelled QF 6-pounder guns mounted on the Mark I were supplied by the navy.

GO FOR BROKE
In the Battle of the Somme,
only 9 out of 32 Mark Is used
reached the enemy's
trenches

AMMUNITION

Ammunition for the 57mm guns was transported in specially designed, heat-resistant metal containers.

RHOMBOIDAL SHAPE

Designed to keep a low centre of gravity and give the tracks the best possible grip on the ground.

ACCESS

Crew entered through the rear of the side sponsons, where the guns were mounted.

SPECIFICATIONS

Manufacturer: William Foster & Co. and Metropolitan Carriage, from the design of William Tritton and Walter Wilson

Entry into service: 1916

Units built: 150

Crew: 8

Empty weight: 28 tonnes

Armour: max. 12mm (0.5in)

Armament: 2 x 57mm (2.24in)

Hotchkiss QF 6-pounder

Armament option: 4 x 8mm (0.315in)

Hotchkiss or Vickers machine guns

Engine: 105hp Foster-Daimler

Top speed: 3.7mph (5.9kmph)

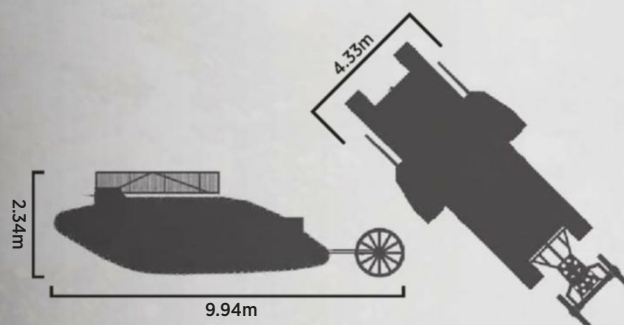
Range: 20-25 miles

CREW

The Mark I carried eight crew members. One driver handled the gears, another the brakes, while at the rear two men managed the secondary engines that directed the tracks. The four remaining crew handled the weapons.

TRACKS

The Mark I was steered by controlling the relative speed of left and right tracks. Each track had a secondary engine for manoeuvring.



WHY DO WE SAY...



SMALL BEER

Today we might dismiss something of little importance as 'small beer'. But to medieval sailors and labourers who swigged litres of the stuff each day, it was no trifle. Brewed to be nutritious and safe to drink but low in alcohol, small beer was an important part of the diet of poorer workers and families. Many derided it – Shakespeare's Henry V asks "Doth it not show vilely in me to desire small beer?" – which is why the phrase came to bear negative connotations.

DID MOST ENGLISH PIRATES REALLY TALK WITH A WEST COUNTRY ACCENT?

One of history's most notorious pirates almost certainly had a West Country twang: Edward 'Blackbeard' Teach, born in Bristol around 1680. Devon and Cornwall accents would probably also have been common in the Caribbean, the region most known for pirate activity in the late 17th century, because of those counties' strong maritime links. However, many of the best-known British pirates and buccaneers weren't English at all. Henry Morgan and Bartholomew Roberts were Welsh, Anne Bonny came from Ireland and Captain Kidd was born in Dundee.

When Dorset-born actor Robert Newton played the archetypal pirate, Long John Silver, in Walt Disney's 1950 film version of Robert Louis Stevenson's *Treasure Island*, he adopted a preposterous

but unforgettable Cornish brogue, later reprising it in *Blackbeard the Pirate* (1952) and *Long John Silver* (1954). The accent has been indelibly linked with piracy ever since. JH

FIERY TEMPER
Edward 'Blackbeard' Teach reputedly tied lit tapers in his hair

"Alright, me luvver?"

170

The number of men required to row an ancient Greek trireme war galley.

WHAT IS THE OLDEST CHURCH IN BRITAIN?

The Church of St Martin of Tours in Canterbury isn't just the oldest Christian church in Britain, it's also claimed to be the oldest in the entire English-speaking world. Parts of its structure are Roman and it predates St Augustine's famous AD 597 mission to bring Christianity to the pagan Angles. In the mid-sixth century, an earlier (possibly Roman) structure was converted into a church by a Frankish princess, Bertha, who agreed to marry the pagan King Æthelberht of Kent provided she could continue



ANCIENT RITES
A Roman tomb lies at the heart of the Church of St Martin, Canterbury

practising her religion. When St Augustine arrived he was delighted to find Bertha an energetic accomplice in his mission, and he adopted St Martin's as his HQ. GJ

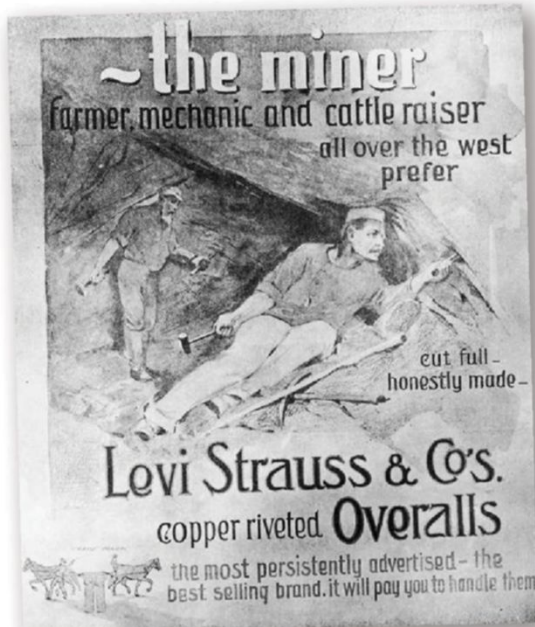
When did people **start** wearing jeans?

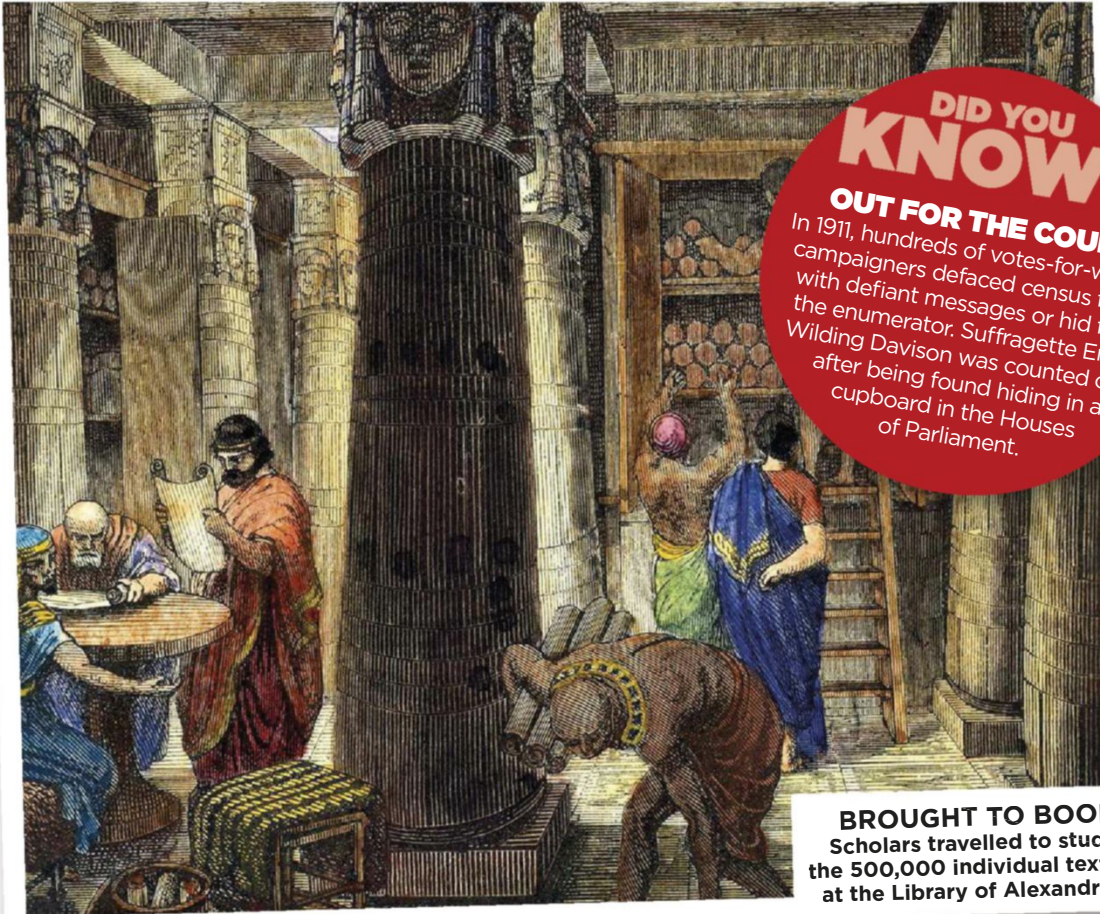
Today they're among the world's most popular items of clothing, but denim jeans were first devised not in the name of fashion but to withstand tough working conditions. Miners in Nevada complained that

their garments were easily torn, so in 1871, tailor Jacob Davis developed hardy trousers made from heavy 'duck cloth' canvas or blue denim, with strengthened metal fastenings. He secured a patent in May 1873 with the financial backing of businessman Levi Strauss, and the business quickly took off.

By the 1890s, 'waist overalls' made from the more flexible denim were favoured. Jeans moved beyond the working classes, and in the 1930s became part of the casual wear of young Americans. By the 1950s, they were widespread among rebellious youths, and had passed into mainstream fashion by the 1970s. And the name? 'Jeans' is possibly a corruption of *Gênes*, the French word for Genoa, where the fabric was first made. EB

RICH SEAMS
An early (c1875) ad for Levi Strauss jeans targets miners





DID YOU KNOW? OUT FOR THE COUNT


In 1911, hundreds of votes-for-women campaigners defaced census forms with defiant messages or hid from the enumerator. Suffragette Emily Wilding Davison was counted only after being found hiding in a cupboard in the Houses of Parliament.

BROUGHT TO BOOK
Scholars travelled to study the 500,000 individual texts at the Library of Alexandria



SHAKE ON IT
People have greeted one another with a handshake for 2,500 years

WHEN DID PEOPLE FIRST SHAKE HANDS?

 The oldest known depiction of such a tactile greeting is a Greek carving from about 450 BC, showing two soldiers shaking hands. However, the gesture is almost certainly much older. The handshake is known across the Old World, though the specifics of the act vary between Europe, Asia and Africa. Given that the custom is not known among the indigenous populations of the Americas or Australia, it probably originated after about 15,000 years ago when those regions became cut off from Asia. RM

What was the Library of Alexandria?



The Royal Library of Alexandria was the greatest archive in the ancient world, housing (so we are told) nearly 500,000 individual texts. Built in the third century BC, it formed part of the world's first cultural and scientific research institute, the great Museum or

Mouseion ('shrine to the muses') of Alexandria. Librarians enforced strict control over their stock: nothing was officially allowed out on loan, and all visitors to Alexandria had any books in their possession immediately confiscated, to be added to the collection. MR

WHAT IS IT?



The Inuit of Arctic North America were crafting goggles to combat snow glare 2,000 years ago. These pairs and their case, fashioned from rawhide and pine, are held in London's Science Museum. www.sciencemuseum.org.uk

BRIGHT IDEA
Slits cut in rawhide goggles protected Inuits' eyes from snow blindness



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Wondering about a particular historical happening? Get in touch - our expert panel has the answer!



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Want to enjoy more history? Our monthly guide to activities and resources is a great place to start

HERE & NOW

BRITAIN'S TREASURES p90 • BOOKS p92

ON OUR RADAR

What's caught our attention this month...

EXHIBITION

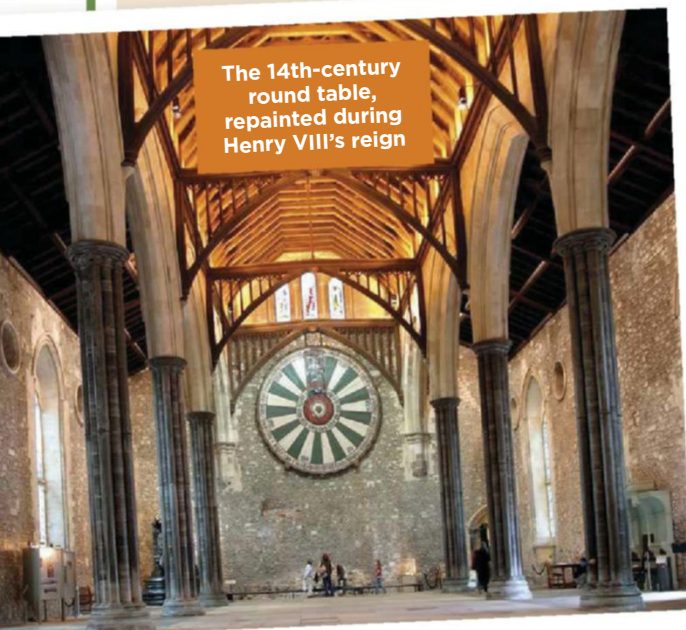
Game Plan: Board Games Rediscovered

8 October 2016 to 23 April 2017 at V&A Museum of Childhood. Full details at vam.ac.uk/moc

Ever played the Game of the Goose? That's just one of **more than 100 games and related objects** from the V&A's vast collection of board games. Game Plan: Board Games Rediscovered features British favourites such as Cluedo and chess, plus beautifully designed games from the 18th and 19th centuries. You can even **get hands-on with interactive games** to learn about the history of such amusements and their role in various cultures.



An *Alice in Wonderland*-inspired chess set – a very British take on a classic game



The 14th-century round table, repainted during Henry VIII's reign

FESTIVAL

BBC History Weekend

7-9 October, Winchester (various venues). Full details are available at historyweekend.com/Winchester

Join an impressive roster of historians, including **Antony Beevor, Suzannah Lipscomb and Peter and Dan Snow**, for a fascinating programme of talks taking place at the 13th-century Great Hall, and Ashburton Hall at the nearby Elizabeth II Court. Topics discussed range from the **Ardennes offensive to medieval mysticism** and even a Victorian guide to love, sex and marriage.

TO BUY

Great Fire of London mug

£19.95 from [emmagridge](http://emmagridge.com)
water.co.uk/inv/1gfl020002

Hot stuff! Remember the Great Fire of London of 1666 with this **half-pint mug made from English earthenware** in the hub of the country's pottery industry – Stoke on Trent.





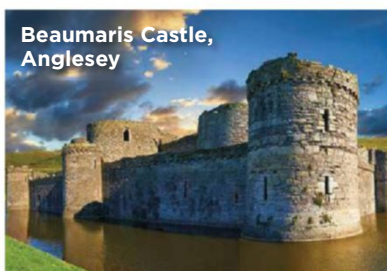
Sculptor Tim Pomeroy with his axe head-inspired creation

EXHIBITION

Stone Age Jade from the Alps

Until 30 October, National Museum of Scotland. Go to bit.ly/2bbnqg0 for more info

In this free event at the National Museum of Scotland, you will find out how these **rare and beautiful neolithic axe heads** (thought to be ceremonial objects) ended up in Scotland so far from where they originated in the Italian Alps over 6,000 years ago.



Beaumaris Castle, Anglesey

EVENT

Meet the Castle Builders

16 October, 11am-4pm at Beaumaris Castle. Details at bit.ly/2bXWWEa

Go back in time to talk to medieval workers who built Anglesey's Beaumaris Castle. Built as part of **Edward I's campaign to conquer the north of Wales** after 1282, find out why the design was so impressive, and more about the battles that took place there.



The rise of Norse chieftain Ragnar continues with the release of the new series

DVD

Vikings, series 4

Available to buy from 24 October



The violent world of the Norse invaders is back for a fourth series, following the **adventures of historical hero Ragnar Lothbrok**, who claimed direct descent from Odin, god of the mythical realm of Asgard. The previous series ended with a **spectacular battle** in Paris, as Ragnar and his men continued their quest

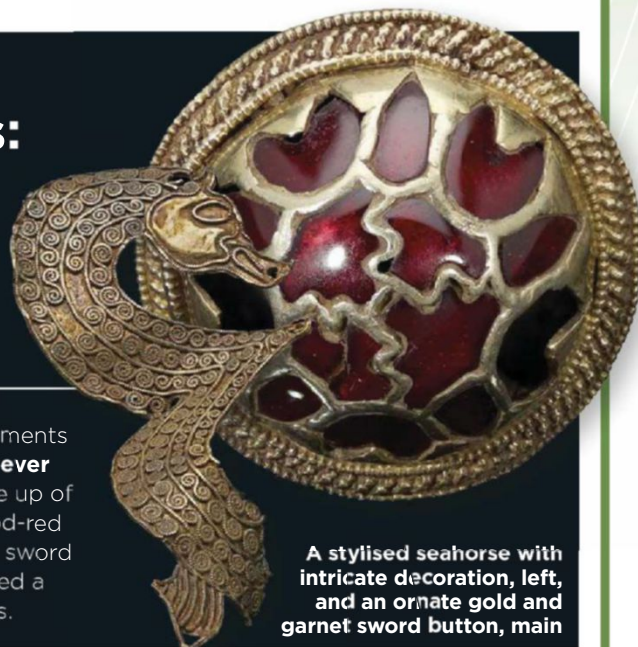
to conquer all. Not just beards and battles, the fictionalised history edges into familiar territory as the **Norsemen get set to become Normans** in northern France. Historically accurate? Maybe not, but it's certainly a visceral and entertaining look at a fascinating character who helped to shape the history of our country.

EXHIBITION

Warrior Treasures: Saxon Gold from the Staffordshire Hoard

22 October 2016 to 23 April 2017, Bristol Museum and Art Gallery. Find out more about the exhibition at bit.ly/2bY2ZJ2

See this stunning collection of gold ornaments (part of the **largest Anglo-Saxon hoard ever found**, unearthed in 2009, which is made up of around 4,000 pieces) studded with blood-red garnets that reveal how an Anglo-Saxon sword was **more than just a weapon** – it signified a warrior's status and even religious beliefs.



A stylised seahorse with intricate decoration, left, and an ornate gold and garnet sword button, main

► ALSO LOOK OUT FOR

- **Curious Connections: Unrest and Uprising**, Tower of London, 18 October, 7pm-8.30pm, £10. Experts discuss London's history of revolt. See bit.ly/2bOb41u
- **Painting Paradise**, Palace of Holyroodhouse, until 26 February 2017. This art exhibit explores the use of gardens from the 1500s onwards. See bit.ly/2aFizn7

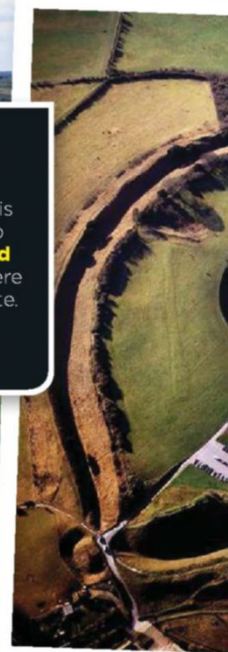
ANCIENT LEGACY

Millennia of activity makes this one of the country's most important ancient sites



OH DEER

Legend states that when moving the cathedral from Old Sarum to what is now Salisbury, the bishop ordered an **arrow be fired from the keep** – and where it landed would be the site. The arrow **struck a deer**, who ran two miles to the banks of the Avon.



BRITAIN'S TREASURES...

OLD SARUM

Salisbury, Wiltshire

An Iron Age hillfort, a Roman then Saxon stronghold, a Norman powerbase and a corrupt parliamentary constituency, Old Sarum has enjoyed a sprawling history

GETTING THERE:

Old Sarum is two miles north of Salisbury – take the A345 until you see the sign. There is a car park at the site, or go by bus. You can also see Old Sarum with the Stonehenge Tour: www.thestonehenge tour.info



TIMES AND PRICES:

Open 10am-6pm in spring and summer, closing at 4pm between November and March. Prices can be found on www.english-heritage.org.uk (members get in for free)

FIND OUT MORE:

Call 0370 3331181 or visit www.english-heritage.org.uk/visit/places/old-sarum

William the Conqueror had invaded England in 1066, killed a king and claimed the throne – now, he needed to stamp his authority. To that end, he ordered the blisteringly fast building of dozens of Norman castles around the country, and it made sense for one such 'motte-and-bailey' to be erected on the site of a mighty Iron Age hillfort, in what is now Wiltshire. Its earth bank defences, strategic location and vastness made it almost impregnable.

That signalled the next phase in the long history of Old Sarum, as the earliest settlement of Salisbury saw more than just Normans, and went far beyond military

purposes. The oval hillfort goes back to around 400 BC, when it became one of the largest Iron Age settlements in England at a quarter of a mile long, surrounded by immense banks and ditches.

CENTRE OF POWER

The Romans also recognised its usefulness after the AD 43 conquest of Britain, so they occupied the hill, naming it Sorviodunum. Next came the Saxons, who used the site to withstand Vikings marauding through what was the kingdom of Wessex. Not much detail is known, as only archaeological scraps survive. In the years after the Norman

Conquest, however, Old Sarum grew into a centre of power. As well as being where the information was collated for his Domesday Book, William chose the castle for the rich and powerful to swear their loyalty. The royal chronicler described the scene on 1 August 1086, when hundreds gathered for this oath: "All the landholding men of any account throughout England, whosoever men they were. And they all bowed to him and became his men, and swore oaths of fealty to him, that they would remain faithful to him against all other men."

A stone keep replaced the wooden castle on the second inner

WHAT TO LOOK FOR...



VERY OLD SARUM
Indications of a prehistoric settlement here go back as far as 3000 BC



1 FIRST CATHEDRAL

Excavated in the early-20th century, the foundations are all that remain after craftsmen used its stones to build the new Salisbury Cathedral.



2 IRON AGE RAMPART

The first thing you see when approaching Old Sarum is the giant Iron Age earth bank. Only Maiden Castle, Dorset, is a larger hillfort.



3 COURTYARD HOUSE

One of the 12th-century additions by Bishop Roger, this is the earliest known example of a medieval house with covered courtyard walks (like a cloister).



4 THE GATEHOUSE

The inner bailey is accessed by a wooden bridge to the 12th-century gatehouse, and what remains of the keep. Look out for the latrine pits, too.



5 WALKING AND VIEWS

With stunning views across the Wiltshire countryside, and 29 acres of grass chalkland to explore, Old Sarum is a great place to see on foot.



6 FAMILY FUN

As 2016 marks the 950th anniversary of the Battle of Hastings, keep an eye on the English Heritage website for special events.

“Old Sarum could elect MPs, even when no one lived there”

bailey, while a cathedral was built on the lower one. It wasn't large and a storm caused extensive damage only five days after consecration. Despite this, the cathedral underwent extensions in the 12th century on the instruction of Bishop Roger, regent of Henry I during the King's absences, and it doubled in size. At 56 metres (180 feet), the foundations remain to this day.

BUSTLING BOROUGH

A powerhouse of administrative, military and religious functions, Old Sarum became a thriving, bustling place. For 16 years, it also served as home to Henry II's queen, Eleanor of Aquitaine, after he had her imprisoned for inciting their sons to rebel against him.

Yet flaws with the location eventually led to the abandonment of Old Sarum. Placed on a hill, water had to be lugged up on carts, living spaces were limited and the wind could be so loud that people could barely hear the clergy. The beginning of the end came with the decision to move the cathedral, dissolved in 1226, two miles south to what is now Salisbury. Old Sarum's population dwindled, the buildings fell into disrepair and, by the end of the 13th century, any serious royal interest in the castle had been lost.

However, for around 500 years from the 14th century, Old Sarum had the power to elect two MPs, even when no one lived there. It was the most infamous 'rotten borough' – which actually put

William Pitt (the Elder) into the House of Commons – before the changes of the 1832 Reform Act. It is an unfortunate coda to a site that has seen so much in its more than 2,000 years.

Those planning to visit Old Sarum, an English Heritage property, should get ready for some walking. Once through the ditch entrance on the eastern side, you can explore the acres of the outer and inner baileys, wander among the stone remains of the castle, and enjoy panoramic views – you can see the new Salisbury Cathedral from the foundations of the old one. It requires a lot of imagination to sense the different incarnations of Old Sarum, but the beautiful countryside and atmosphere mean you won't struggle for inspiration. 📍

WHY NOT VISIT...

You're spoilt for choice in the Wiltshire countryside...

SALISBURY CATHEDRAL

The cathedral is home to Britain's tallest church spire, the world's oldest clock, a copy of *Magna Carta* and a fascinating reconstruction of Old Sarum. www.salisburycathedral.org.uk

STONEHENGE

Just 10 miles from Old Sarum is the mysterious Neolithic wonder of the world, with a superb visitor centre. www.english-heritage.org.uk/visit/places/stonehenge

AVEBURY

Although not as famous as Stonehenge, you can walk among and touch this henge and several stone circles, one of which is the largest in Britain. www.english-heritage.org.uk/visit/places/avebury

BOOK REVIEWS

This month's best historical books

Hero of the Empire: The Making of Winston Churchill

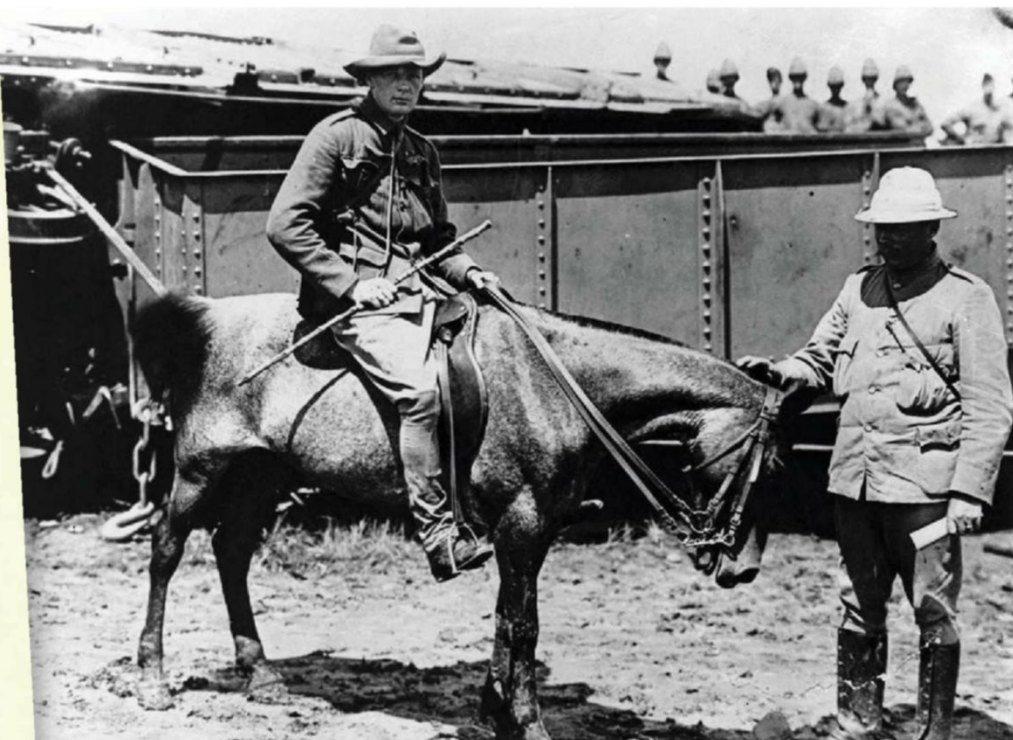
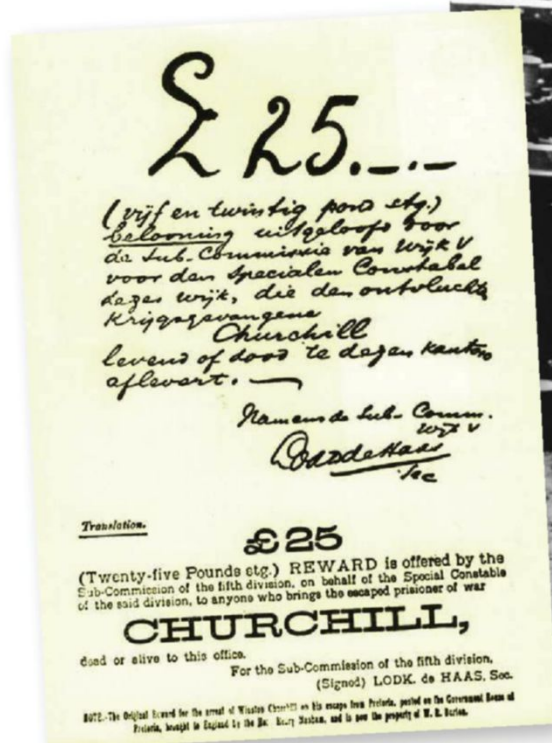
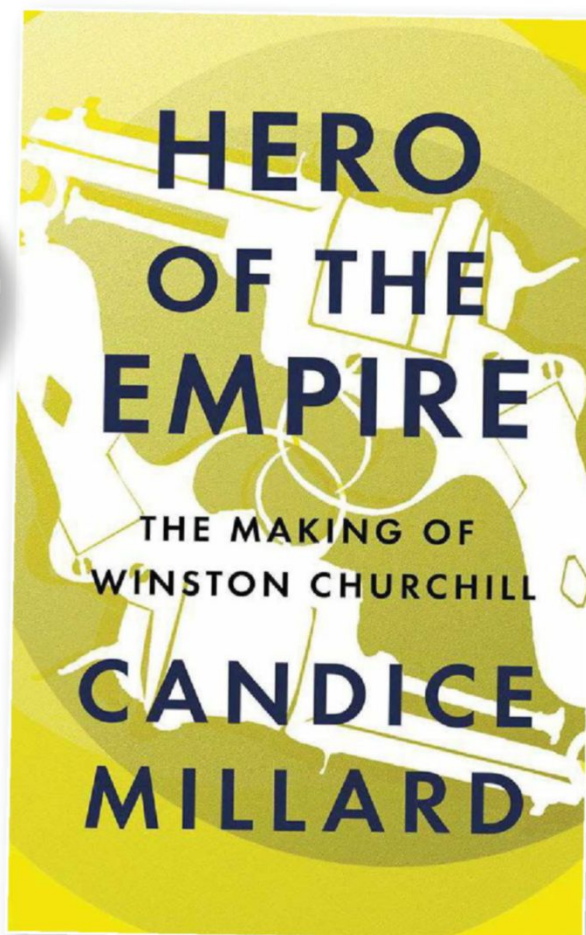
By Candice Millard

Allen Lane, £20, 400 pages, hardback

We all know the stereotypical image of Winston Churchill as prime minister – cigar in mouth, hat on head, fingers perhaps raised in a V. Yet what of the young Churchill? How did his experiences inform the career and personality of the older man? That's the question behind this compelling new biography, which explores the 20-something Winston as he sought fame and glory in the perilous landscape of South Africa. Imprisonment, escape and a triumphant return all awaited him – as well as encounters with some of the most famous figures of the time, including Rudyard Kipling and Mahatma Gandhi.

“It explores the twenty-something Winston as he sought fame and glory in South Africa”

BOOK
OF THE
MONTH



LEFT: A 'wanted' poster issued by the Boers offering a £25 reward for Churchill's capture ABOVE: Churchill following his escape from imprisonment

MEET THE AUTHOR

Candice Millard exposes Winston Churchill's early years, and investigates how his part in the Boer War made him the man that we remember today

Which period of Winston Churchill's life does your book explore?

The story takes place in 1899, when Winston Churchill, just 24 years old, travelled to South Africa as a journalist to cover Britain's conflict with the Boers, who were white settlers of mainly Dutch descent. Just a month after he arrived, an armoured military train in which he was riding was attacked by the Boers, and Churchill was captured and imprisoned in a POW camp in Pretoria. Then, to the outrage of the Boers and the delight of the British, Churchill escaped. Incredibly, he made it across nearly 300 miles of enemy territory alone, without a map, a compass, food or a weapon, with no knowledge of the language, and with the Boers in hot pursuit.



Which episodes of Churchill's time in South Africa stand out to you as being among the most important?

It's difficult to choose because so much happened to him in such a short time. After his triumphant arrival at the British consulate in Portuguese East Africa, now Mozambique, he requested a commission and returned to the war as an army officer, fighting in some of the most important battles of the war. He even rode into Pretoria, the Boer capital, the day it fell to the British and freed the men with whom he had been imprisoned, watching as the Union Jack was hoisted above the prison walls.

Churchill accomplished so much and was so strikingly determined and brazen that it's easy to forget how young he was, and that, when the war began, he was a minor figure, with no control over the events swirling around him. By sheer force of personality,

he turned a military disaster into a personal triumph and a ticket to political power.

How would you describe Churchill's character during his 20s?

He was arrogant, audacious, brilliant, hard working and extraordinarily ambitious. By the time he reached South Africa, he had already taken part in three wars on three different continents, written three books and run for parliament for the first time – all before his 25th birthday. Even at that young age, he knew that he was destined for greatness, and he was far from alone in this belief.

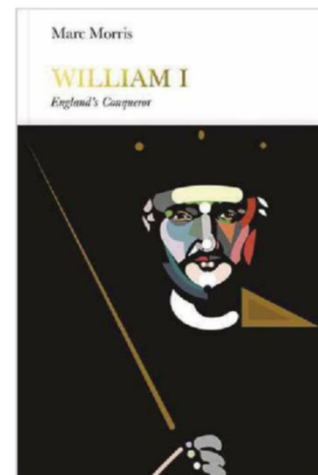
In your opinion, how much of an impact do you think that this period had on his later life and career?

There's no question that the Boer War launched Churchill's political career. He had run for parliament just a few months before the war began and had lost, even though he already had a famous name, as the son of Lord Randolph Churchill, a former chancellor of the exchequer. When he

returned from the war, he was no longer simply the son of a powerful man – he was a hero. He had made a name for himself, and it was his own actions, his own courage, brilliance, grit and fame that won him election just a few months later.

Beyond simply giving Churchill his first taste of political power, the Boer War helped to shape the leader he would become. Many of the most distinctive characteristics of his later leadership style – his agility, ingenuity, single-minded determination – came out of his experiences in this war and the lessons he learned there.

“He made it across nearly 300 miles of enemy territory alone, with the Boers in hot pursuit”

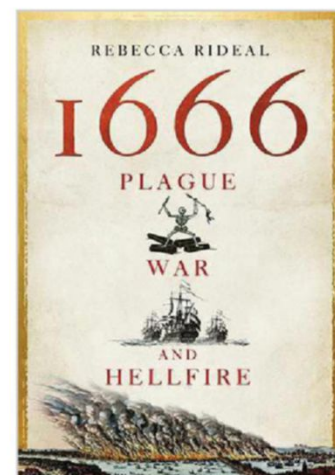


William I: England's Conqueror

By Marc Morris

Allen Lane, £12.99, 128 pages, hardback

The latest in these pocket guides to English and British monarchs is undoubtedly timely, coming 950 years after William's success at the Battle of Hastings. This is a lively, insightful guide to a king who changed the face of a nation's history, from an author whose many books on the Middle Ages have received five-star reviews.

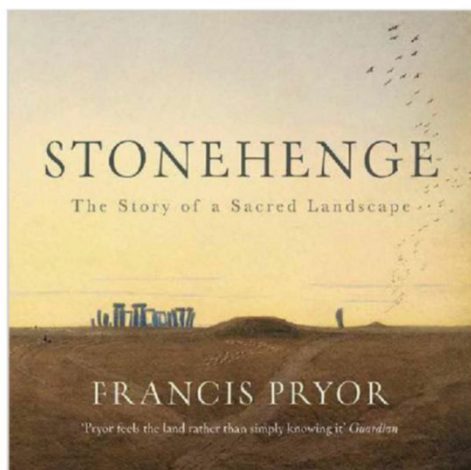


1666: Plague, War and Hellfire

By Rebecca Rideal

John Murray, £20, 304 pages, hardback

Perhaps the next most famous date in British history after 1066 is 1666 – the Great Fire of London. But, as this book chronicles, there's more to the year than a city in flames – there's also war and plague, and great art and architecture too. Based on original archival research, *Plague, War and Hellfire* is bound to reveal secrets you won't have heard before.

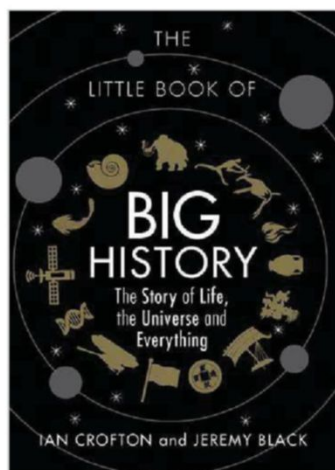


Stonehenge: The Story of a Sacred Landscape

By Francis Pryor

Head of Zeus, £16.99, 208 pages, hardback

From its origins and purpose to cultural context and later reinterpretation, this is a masterful overview of the historical hotspot that is Stonehenge. Francis Pryor's personable, authoritative prose is just what's needed to breathe life into a subject you might have thought long exhausted.

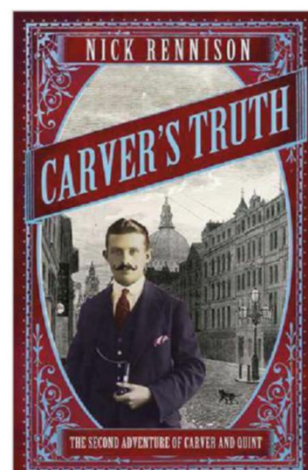


The Little Book of Big History

By Ian Crofton and Jeremy Black

Michael O'Mara, £12.99, 272 pages, hardback

Another of those books seemingly daring itself to do the impossible, this aims to chart all of history – and in just 272 pages. Yet it's an interesting attempt to mix world history with physics, astronomy and biology, and certainly shows how massive time and space really are.

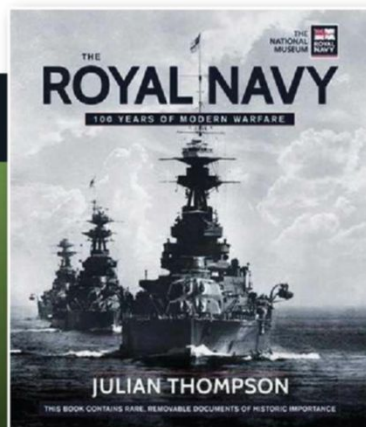


Carver's Truth

By Nick Rennison

Corvus, £8.99, 352 pages, paperback

From missing dancing girls in London's West End to danger on the streets in Berlin, this novel combines a murder mystery with a vivid exploration of 19th-century Europe. It's as accessible for newcomers as it is to readers of Rennison's previous novel, *Carver's Quest*. *Sherlock Holmes* fans will revel in its gripping storyline and Rennison's mastery of Victorian dialogue.



For a concise guide to naval battles from the last 100 years, this new illustrated book is sure to entertain

The Royal Navy: 100 Years of Modern Warfare

By Julian Thompson

Andre Deutsch, £40, 80 pages, hardback

Explore a century of naval activity – from combat to convoys and humanitarian crises – with this visual guide, featuring reproductions of contemporary maps, personal records and other documents. Boxouts provide information on key individuals, and many of the images are incredibly striking.

VISUAL BOOK OF THE MONTH



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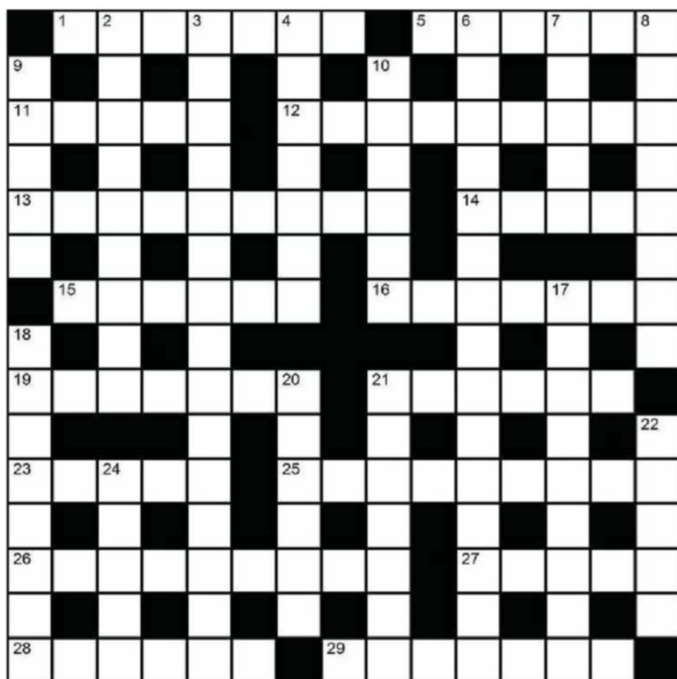
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CROSSWORD N° 34

Test your history knowledge to solve our prize puzzle – and you could win a fantastic prize!

Set by Richard Smyth



ACROSS

- 1** Walter ____ (1920–2000), US actor who co-starred in *The Odd Couple* (1968) (7)
5 Battle of ____, bloody Western Front clash of 1916 (6)
11 Leonhard ____ (1707–83), Swiss mathematician and physicist (5)
12 *The ____*, 1960 play by Harold Pinter (9)
13 Cursed prophetic in ancient Greek mythology (9)
14 1831 opera by Vincenzo Bellini (5)
15 The Roman goddess of dawn (6)
16 'Tis ____ gives England her soldiers' – George Meredith, 1885 (7)
19 David ____ (b.1941), linguist,

author of books including *The Story of English in 100 Words* (7)

- 21** Ancient Chinese philosophical and religious tradition (6)
23 Monetary unit of Muslim India since the 1500s (5)
25 'Was there a man dismayed?/Not though the soldier knew/Someone had ____' – Tennyson, *The Charge Of The Light Brigade* (1854) (9)
26 Idaho-born Modernist poet (1885–1972) (4,5)
27 Town of lowland Scotland, a brewing centre in the 19th century (5)
28 Hemingway, Shackleton or Rutherford, perhaps (6)

- 29** Football club founded as Dial Square in 1886 (7)

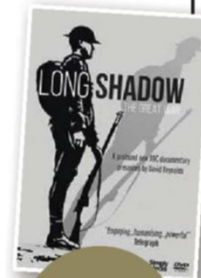
DOWN

- 1** Historic town in Buckinghamshire (9)
3 1912 novel by Edgar Rice Burroughs (6,2,3,4)
4 In poetry and mythology, a pastoral idyll (7)
6 Name given to a 1904 alliance between the UK and France (7,8)
7 Capital of the Republic of Senegal since 1960 (5)
8 French region, formerly a duchy, founded by the 10th-century Viking chief Rollo (8)
9 Family name historically associated with the Duchy of Northumberland (5)
10 Giorgio ____ (b.1934), Italian fashion designer (6)
17 Country settled by the 'First Fleet' in the late 18th century (9)
18 Martin ____ (b.1942), Italian-American film director (8)
20 Modern name of the political party founded in 1900 by activists including Keir Hardie (6)
21 'Are there no stones in heaven but what serve for the ____?' – *Othello*, Act 5 Scene 2 (7)
22 Member of the House of Wessex known as 'the Aetheling', proclaimed king in 1066 (5)
24 Eva ____ (1919–52), Argentine political figure known as 'Evita' (5)

CHANCE TO WIN

Long Shadow: the Great War

Historian David Reynolds presents a profound BBC documentary series, based on his prize-winning book, exploring the impact of World War I on the world in 1918 and its enduring legacy. Powerful and moving. Released by Simply Media, £19.99.



DVD (RRP £19.99) FOR THREE WINNERS

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Post entries to **History Revealed, October 2016 Crossword, PO Box 501, Leicester LE94 0AA** or email them to **october2016@historyrevealedcomps.co.uk** by noon on **12 October 2016**. By entering, participants agree to be bound by the terms and conditions shown in the box below. Immediate Media Co Ltd, publishers of *History Revealed*, would love to keep you informed by post or telephone of special offers and promotions from the Immediate Media Co Group. Please write 'Do Not Contact IMC' if you prefer not to receive such information by post or phone. If you would like to receive this information by email, please write your email address on the entry. You may unsubscribe from receiving these messages at any time. For more about the Immediate Privacy Policy, see the box below.

SOLUTION N° 32



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The closing date and time is as shown under **How to Enter**, above. Entries received after that will not be considered. Entries cannot be returned. Entrants must supply full name, address and daytime phone number. Immediate Media Company (publishers of *History Revealed*) will only ever use personal details for the purposes of administering this competition, and will not publish them or provide them to anyone without permission. Read more about the Immediate Privacy Policy at www.immediatemediacompany.co.uk/privacy-policy.

The winning entrants will be the first correct entries drawn at random after the closing time. The prize and number of winners will be as shown on the Crossword page. There is no cash alternative and the prize will not be transferable. Immediate Media Company Bristol Limited's decision is final and no correspondence relating to the competition will be entered into. The winners will be notified by post within 28 days of the close of the competition. The name and county of residence of the winners will be published in the magazine within two months of the

closing date. If the winner is unable to be contacted within one month of the closing date, Immediate Media Company Bristol Limited reserves the right to offer the prize to a runner-up. Immediate Media Company Bristol Limited reserves the right to amend these terms and conditions or to cancel, alter or amend the promotion at any stage, if deemed necessary in its opinion, or if circumstances arise outside of its control. The promotion is subject to the laws of England. Promoter: Immediate Media Company Bristol Limited



NEXT MONTH
ON SALE **13 OCTOBER**
.....

SAS COMMANDOS

How World War II's secret heroes brought
Hitler's empire to its knees

ALSO NEXT MONTH...

TOP 10 UNSOLVED CRIMES BRIEF HISTORY
OF THE PUB **ENGLAND'S FORGOTTEN QUEEN**
GREAT DEPRESSION **MALLORY'S CLIMB TO THE**
TOP BATTLE OF SALAMIS **HERNAN CORTES VS**
THE AZTECS AND MUCH MORE...

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REVEALED Bringing the past to life

A-Z of History

Nige Tassell knows what's what, and with wondrous wordmanship, writes up on the weird and the wonderful

WALSINGHAM'S WHEEDLING WILL

Although he was Elizabeth I's right-hand man, Sir Francis Walsingham – the spymaster who thwarted several plots against her – owed a great deal of money when he died in 1590. In his will, he expressed his embarrassment at “the greatness of my debts and the mean state [I] shall leave my wife and heirs in”. One of the main causes for his sorry finances was that he underwrote the lavish funeral of his son-in-law, the courtier Sir Philip Sidney.

Wild West whimsy

One of the totemic battles in US history, the gunfight at the OK Corral was far from epic in length. It lasted just 30 seconds. More than that, it didn't even take place at the location in Tombstone, Arizona whose name it bears. The 1881 shoot-out occurred on an empty lot next to a photographic studio, six doors down from the Corral's back door.

WINNIE THE WINNER

A A Milne's *Winnie The Pooh* stories have been hits across the world, translated into over 50 languages. There's even been a version in Latin called *Winnie ille Pu*, published in 1958. Two years later, it became the first book in Latin to make the *New York Times* bestsellers list.

WOODEN WASHINGTON?

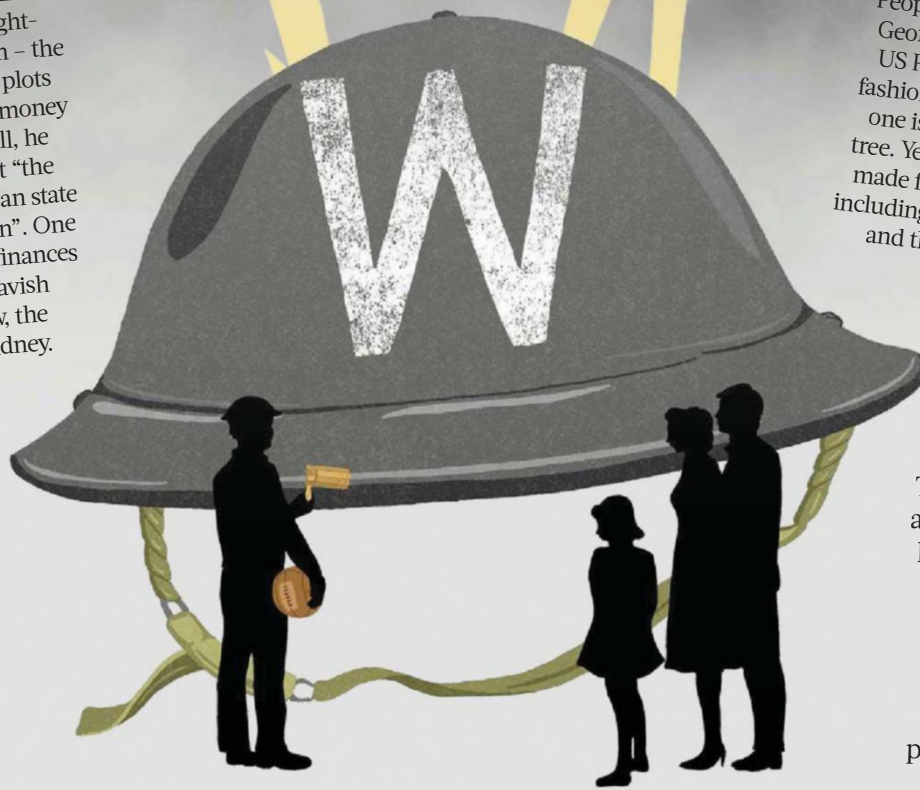
People tend to know two things about George Washington – he was the first US President and he wore false teeth fashioned from wood. Sadly, the second one is barking up the wrong (cherry) tree. Yes, he used dentures, but his were made from materials other than wood, including elephant ivory, lead, cow's teeth and the gnashers of other humans.

Wellington welcomes women

The New Zealand capital is a significant location in the history of female suffrage. In 1893, its parliament buildings witnessed the passing of the Electoral Act, making the country the first on the entire planet to hand women the right to vote.

WHITE HOUSE GETS WIRED

The White House was only a nickname for the presidential home until newly elected President Theodore Roosevelt made it the official name in 1901. Until then, it had officially been the Executive Mansion. The makeover didn't end there. The following year, Roosevelt commissioned extensive renovations, including the installation of electricity throughout the building and the introduction of a lift.



WARDEN

Britain's air-raid wardens had a varied remit during World War II. Not only were they charged with upholding night-time black-outs, administering first aid and reporting unexploded bombs, they were also responsible for keeping up the public's morale. This they did by organising events like music concerts and sporting fixtures. These, temporarily at least, distracted minds from the nightly aerial threat.

WODEN'S WALL IN WILTSHIRE

Hadrian's Wall may be Britain's most famous big barricade – but it's not the only one, nor even the longest. Offa's Dyke, separating ancient Mercia from Wales, stretched for over 170 miles – more than twice as long as Hadrian's barrier. And there's another – the Wansdyke (originally Woden's Dyke), constructed probably by Romano-Britons in the sixth century to halt the incursions by invading Saxons. Today, two sections of high banks and ditches totalling over 20 miles stretch across Wiltshire and Somerset, with white horses and burial barrows dotted nearby.

Inspiring young minds!

AQUILA Magazine is a big hit in the world of children's publishing, bringing a unique blend of challenging ideas and irreverent fun to thousands of young fans around the world every month.

What is so special about AQUILA Magazine? Well, it has no ads, fads or swipecy-buttons, just mind-stretching fun for the whole family to enjoy. It is carefully designed to harness children's desire to find out more about the world and how things work. Fostering their interest in science and the arts, it always has a healthy dose of humour and general knowledge thrown in for good measure.

What's inside? Every month the magazine introduces a fresh new topic – these are explored in an ingenious and exuberant fashion, with articles, experiments and creative things to make – the magazine also explores philosophy and wellbeing to make sure young readers maintain a balanced take on life. As well as all of this, **AQUILA** is beautifully illustrated by up-and-coming artists and includes photos and diagrams throughout.

If this all sounds too good to be true, then the evidence shows that thousands of teachers, parents and grandparents recognise a good thing when they see it, recommending **AQUILA** to their students and friends: the magazine receives nearly as many new orders by recommendation as it does from advertising.

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Children of World War II

Grab your gas-mask and climb aboard!

This September we discover **WWII** from a child's eye view, bringing to life the amazing true stories of wartime children, like doodlebug-dodging Doris who was just ten when she was **evacuated** to Mr and Mrs Cole's tearooms in rural Hertfordshire. Readers can make a model **Anderson shelter** and have a go at **Make Do and Mend**. We make some **Penicillin** (strictly for observational purposes of course!) and find out how our **Scouts and Guides** helped win the war. Including a timeshift visit to the **German occupied Channel Islands** plus **AQUILA's** usual ration of games, fiendish quizzes and competitions.

IDEAL FOR LIVELY 8-12 YEAR OLDS
See sample magazine online

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George Stubbs, *Horse Frightened by a Lion* (detail),
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